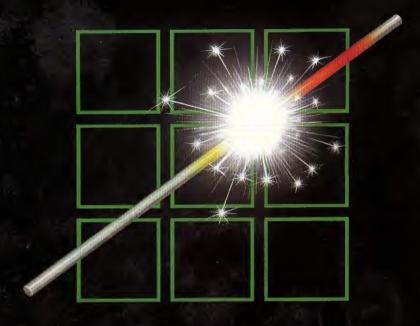


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Time bomb

Collect the TNT before time runs out and the Big Bang theory becomes fact

Machine code graphics

Learn how screen memory is organised in the first part of a great new series. 20



Software surgery

All you want to know about the latest in software from our frank reviewers. 23



*FX

The start of another new series looking into the uses of operating system calls.

Hardware

Cumana's alternative to Acorn's Plus 3 is given a thorough workout.

28 Scrapbook

A selection of short. simple, fun listings from our readers. 30



Manic Mole

Machine code action at its best as you try to raise the bail and free the mole.

Notebook

A simple program, simply explained. 41

Pirate maths

Arithmetic can be fun when you fly the Jolly Roger.



Micro Messages

The pages you write yourself. A selection from our mailbag. 49

Higher or lower

Can you beat the Electron at this ace card game?

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Cut price offer ends

A MAIL order operation offering top selling games at rock bottom prices has apparently stopped, just as leading software publishers including Acornsoft were investigating its activities.

Money has been returned to people who ordered software packs from a firm called A1 Software Services, of Hornchurch, Essex.

Famous titles like Elike Elike Pole Position. Micro Olympics, Hunchback, Football Manager and Combat Lynx – all Electron favourites – were mentioned in the promotion, which offered as many as 50 games for £30.

React

Acornsoft's head of technical services. John Collins, was among the first to react to the mail shot after hearing about it from readers of Database Publications.

Collins sent a postal order for £19 to A1 Software Services for a pack of 15 games.

An Acornsoft col-

Turn to Page 6



Massive queues for the big, big show

ALL previous attendance records were smashed during the latest in the series of Electron & BBC Micro User shows.

In all, well in excess of 20,000 visitors filed their way through the turnstiles in the New Horticultural Hall, London, over the four day event.

At peak times on Saturday and Sunday, queues more than a mile long formed as enthusiasts braved unseasonal icy winds to wait their turn to get inside.

One non-computer buff who passed by remarked: "I've seen smaller crowds at Wembley on Cup Final day. What's going on?"

Extra door staff were being rushed into position to speed up the entry flow and so prevent the crowd backlog from presenting central London with a major traffic problem.

"Based on our previous shows, we had expected a significant turnout", sald Derek Meakin, head of Database Publications, the show's organisers.

"But we were amazed by the size of the crowds this time.

"If nothing else, it was a supreme vote of confidence in both the Electron and the BBC Micro by the people who count – the users". Nor were Electron users disappointed when they finally got inside.

Continuing support for the machine was amply demonstrated by the emphasis placed on the Electron by the exhibiting companies.

Typical of this was Cumana, the disc drive supplier, which displayed two Electrons running with Plus 1 and one of the company's interfaces.

"There were plenty of goodies around for the machine which made the trip very well worth-while", said John Roberts from Wellssey, who had travelled from Merseyside just to attend the show.

"It was good to see a noticeable shift away from games and with more serious applications for the Electron such as complete O level English language courses".

Cassette prices cut

ACORNSOFT has cut the prices of nearly all its cassette titles for the Electron.

The new prices, which makes titles 24 per cent cheaper at £6.99, have been introduced "to give Electron software the same increased value-for-money that the Electron now represents at

£129", says Acornsoft.

The new price applies to all games on cassette except Elite and Countdown to Doom, and to all education, business and home interest cassette titles except the Linkwood foreign language tutors.

Altogether a total of 56 titles have had their prices cut.

July 1985 ELECTRON USER 5

Brush up French

EDUCATIONAL software house Chalksoft wants to help Electron users brush up on their French.

Eiffel Tower is a dual program aimed at schoolchildren, students, tourists and businessmen and contains hundreds of words grouped in families.

Users can insert their own word sets, and there's a fun element as correct answers "build" the Elifel Tower onscreen. Price is £9.25.

Disc toolkit

ADVANCED Computer Products has brought out what it claims is the most versatile advanced disc toolkit ever for the Electron and other Acorn legal compatibles.

The 16k aprom contains more than 30 commands, works in any screen mode and enables the user to view over 2k of memory at a glance.

Price is £29.

Offer ends

From Page 5

league sent 25p postage and packing for a "free" game chosen from a list of 20 wellknown titles.

Collins told Electron User: "My money was refunded along with a slip of paper saying 'A1 Software Services has ceased trading'.

"My colleague has not yet received a reply. "I shall be pleased if

this mail order operation

"We were most concerned that our titles had been mentioned in it and our legal department was ready to act should any infringement of copyright have been involved"



Software pool plan wins two micros

STEPHEN Perugi, aged 13, has won a unique Acorn micro for his school. Bedford Modern, and an Electron home computer for himself in the first competition organised by The Times Network for Schools.

Entrants were asked to devise a project for TTNS that would make full use of the network's communications and database features and be of social value.

Stephen suggested developing a pool of software for schools for the mentally handicapped, pointing out that the cost of buying specialist packages is beyond most school budoets.

His idea was for special schools needing software to put descriptions of their requirements on the database. for programmers in other schools to work

Once programs were developed they would

be added to a TTNS software library and downloaded free of charge by any school needing them.

Stephen's idea will be implemented by TTNS over the next few months, and special schools will be encouraged to take part.

The unique Acommachine won by Bedtord Modern School is a 32 bit micro based on the NS 32016 processor, with a 10mbyte hard disc and a high resolution colour monitor.

Stephen's personal prize is Acorn's "Have Fun With The Electron" pack, consisting of an Electron, Plus One extension, software, joysticks, books and accessories.

Ten runners-up will get a copy of the 1985 Times Atlas of the World for their schools and a copy of the 1985 Times Concise Atlas for themselves.

Acorn decided to

donate a special prize of a BBC Micro with voice synthesiser to Linden Lodge School for the Visually Handicapped.

Pupis of the weekly boarding school submitted a collective entry proposing that TTNS should help integrate handicapped children with those in ordinary schools through the use of speech synthesisers and Braille link add-ons for micros.

News of local and

national events would then be readily available from the database and students could swap ideas and information.

Picture shows Lord Young of Graffham with prizewinners of The Times Network for Schools Communicate Competition (left to right): Gordon Jones, chief executive of TTNS. Stephen Perugi, Bedford Modern School and Martin Maidment, Linden Lodde School.

Summer boost for

ACORN will continue to promote the Electron through an extensive advertising campaign to be held during the traditionally quiet summer sales season.

The thinking behind the campaign is not to try to stimulate the dormant home user market but to promote the machine in the small business and speciality mar-

Marketing chief John Caswell told Electron User: "We are not aiming at traditional markets

supplied the first and the property facility of the property of the contract o

Down garden path to maths

TO get away from the question - and - answer type computer maths programs. Hilditch Software has released a Creative Mathematics three-part series for the Electron.

The first in the package. How Does Your Garden Grow? is for three - to - seven - year-olds.

Progressing from the numbers one to nine, then through larger numbers and simple arithmetic, it claims to allow a child to design a flower gardon

Mosaic, part two is a design program suitable for all ages, and uses repeated small elements to build up a picture.

It can also be used to design embroidery patterns, construct bar charts and explain mathematical concepts.

Based on the use of coordinates. Hunt the Treasure – the final part – is for children in the middle school-ago range.

It is intended to develop language skills, design abilities and logic.

Programs on tape cost £9.50 or £11.50 on

Electron

like games players, but hoping to break into new ones.

"We will be test marketing in strategic areas.

"We have a lot of exciting projects on the go which will be announced during the next few months".

Retailer raps sub-standard educational software

MUCH of the educational software available for the Electron is of poor quality, claims mail order executive Bradley Viner.

He says it is this which is preventing the educational market from reallsing its full notables.

Now Viner, managing director of mail order house First Byte, Is calling on fellow retailers to unite to "banish the bad".

'There is a lot of high

quality software around - such as from Penguin, Shards, Highlight. ASK and Mirrorsoft - but it is a question of sorting the good from the bad", he said.

"The customer cannot be expected to do this. He relies on advice given by the retailer.

First Byte keeps an eye on the market by compiling a database of program reviews from all sources, plus their own feelings on the software, said Viner. It

enables the company to recommend software they feel will be of benefit to the buyer.

The company also runs the Brain Train Club, membership of which entitles its customers to discounts, more advice and news-fetters.

Unfortunately a lot of retallers were not in a position to do this because of their lack of specialist knowledge, he said.

"You have got to take

an active interest rather than sell everything pushed through or whatever has highest margins.

"You've got to look for high quality material and only sell that if you want to restore the public's confidence in educational software.

"The educational market will not grow to its full potential unless the trade in general supplies the right quality software at the right price"

Paul, 17, collects the Elite £1,000



Paul Shonk. 17, the son of a Croydon sales executive, snatched the title in the face of fierce competition during the Electron & BBC Micro Usar Show.

The youngster, who had practised the cult space game for seven hours a week before the build up to his exams. carried off a £1,000 prize.

Twelve finalists converged on the New Horticultural Haff to display their skills during the marathon two-day

play off.

Each had previously won eliminating heats organised by Acornsoft since the company launched Elite In September. 1984.

The finalists were: Dave Brunner, a computer studies teacher from Romford, Essex.

Joseph Buchdahl, a 14-year-old schoolboy from Horningsea. Cambridge, who much prefers history and biology to computing.

Philip Carson, aged 18 and studying physics, maths and electronic engineering at Surbiton School, Surrey.

David Duckworth, a 19-year-old who sells cleaners on a market stall in his home town of Preston, Lancashire,

Mathew Huddleston. a 14-year-old student at Kings Manor, Shore-ham, who can be found playing the theatre organ – or Elite – when not studying for his O levels.

Mike Keeting, a biology teacher from Leeds who ran afoul of domestic problems for playing Elite seven hours a day when it first came out.

Brett Keys, a 30-year-old electronics technician who writes accounts software packages in his spare time.

Andrew Myers, a 16-year-old rugby enthusiast who is about to take O levels at Whitchurch.

Darren Rowley, aged 19 and an employee of a food company in Rugby.

Kemal Sangrar, 15 a student at Our Lady's High School, Cumbernauld, Glasgow.

Andrew Vickery, a 17-year-old British Telecom apprentice engineer and self confessed Elite-aholic who plays up to four hours a night.

"The competition was really not and I'm just very pleased to have emerged the Winner", said Paul Shonk.

He's already decided what to do with the prize money. He is going to buy a BBC B+ and a bigger disc drive.







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Not that you'd ever

want to use one, but . . .

How not to let those GOTOs drive you loopy!

Part 18 of PETE BIBBY's introduction to the art of programming

LAST month we had a look at the way that GOTO works and sampled some of the many problems it can cause. Again let me repeat that while I may have told you about it I don't recommend its use, except among consenting adults who really know what they're doing.

Used badly, GOTOs can, at worst, destroy a program. At best they can make it incomprehensible. In fact they should carry a health warning.

Having said all that, this time we'll be having a closer look at the way we can use GOTOs to create loops.

No, I'm not being inconsistent, By the time we've finished we'll have come across a way of avoiding GOTOs. We're exploring them to learn how to do without them.

Take a look at Program I, fast month's Program XIV. Does it remind you of anything?

10 REM PROSRAM I
20 SEM OLD PROSRAM XIV
10 LET variable=1
40 PRINT variable
50 LET variable=variable
11
50 IF variable(=10 THEN
6010 48

Program I

There's no mystery about how it works. The variable variable is initially given the value 1 in line 30. The next line displays the value of variable and, this done, line 50 increases its value by one.

The program then comes on to the IF . . . THEN of line 60. This tests *variable* to see if it is less than or equal to 10. If this is the case the GOTO (boo, hiss) after the THEN sends the program back to line 40 and the whole process repeats.

Eventually variable has the value 11, the condition of line

60 fails and the program ends. You can test this by adding:

TO PRINT variable

and running the program again.

In other words, the program lines form a loop which cycles while variable goes from 1 to 10 and then stops dead. If line 60 had been:

50 30TO 48

the loop would have carried on forever (or until we hit Escape, Break or the Electron). It would have been an infinite loop.

As it is, the IF ... THEN of the loop. If variable is greater than 10, then the condition is false and the part of the line after the THEN is ignored. In effect, the GOTO only works within the conditions of the IF.

While variable is less than or equal to 10 the program is stuck in the loop. If and when it becomes greater than 10, the loop stops.

Put more formally, the exit

condition for the loop is that variable is greater than 10. When this is the case, the program exits out of the loop and, in this case, ends.

Try changing the last line of the program to lines such as:

68 IF variable(18 THEM BOTO 18 68 IF variable=18 THEM BOTO 48 58 IF variable>18 THEM BOTO 48

and see if you can understand what's happening. Notice that the loop is always performed at least once.

Finally, try:

60 IF variable(=10 THEN GOTS 30

This is quite a common mistake which can be surprisingly hard to spot. As I've sald before, beware GOTOs, they're easy to use but hard to use well,

Have you figured out what

Program 1 resembles? Program II, which does the same job, gives the answer.

> ið aem PRSGRAM II 38 FOR variable≃1 TO 18

30 PRINT variable 40 NEXT variable

Program II

As you can see, it's our old friend the FOR ... NEXT loop, if you cast your mind back, you'll remember that all the lines between the FOR and the NEXT are repeated. The number of times that this happens depends on the values given to the loop control variable.

In this case variable is to range in value from 1 to 10.

range in value from 1 to 10.
Why, you may ask, if we can
do its job with a simple GOTO.
should the Electron's Basic
have a FOR... NEXT loop? It
seems a bit redundant.

The answer is that the FOR ... NEXT loop is a much better structure. Compare the two programs.

Program II is much easier to understand. The FOR..., NEXT loop sets out its limits clearly. It's obvious that the loop will cycle ten times and that everything inside the loop will be repeated ten times.

The workings of Program I are much more complicated and obscure. And where there's complication and obscurity, bugs lurk, waiting to destroy your programs!

Get the line number after

From Page 9

the GOTO or the operators in the condition wrong and there's the devil to pay. And, because the structure is fairly complicated, it can be murder to figure out what's going wrong.

The moral is, don't use GOTOs to form loops if a FOR ... NEXT loop will do the job. This will benefit both your programs and your sanity!

Program III is a variant of Program I in which variable is increased by two each time round the loop.

18 REM PROGRAM III
20 LET variable=1
30 PRINT variable
40 LET variable=variable
*2
50 IF variable<=18 TNEN
6010 38

Program III

You should be able to see why it prints out 1, 3, 5, 7, 9 and then stops. Can you rewrite the program using a FOR ... NEXT loop with a STEP of two?

Notice that the GOTO of line 50 only comes into effect while variable is less than or equal to 10. In other words the loop carries on until variable is greater than 10. The exit condition of the loop is that variable must be greater than 10.

If you must insist on using GOTO to create your loops, make sure that your exit condition will actually exist. If you don't see what I mean, try changing line 50 of Program III to:

50 1F variable ○10 THEN GOTO 3&

You'll find that you've got an endless loop on your hands.

What's happened is that you've told the program that when it reaches line 50 it is to go back to line 30 provided that variable isn't equal to 10.

The only time it won't loop is when variable is equal to 10.

The trouble is that the way that the program is constructed means that this exit condition won't happen. variable goes from 1 to 3 then 5, 7 and 9, followed by 11, 13 and so on. It never actually equals 10, so the loop carries on.

This is a problem to watch to. While in this example if was fairly obvious, when you have a condition made up of lots of little conditions joined with ANDs and ORs and suchlike it can happen very easily.

Program IV shows us GOTO in action again, only now there are two of them.

> 18 REM PROGRAM IV 20 LET variable=1 30 PRINT variable 42 LET variable=variable

50 IF variable(20 THEM P RINT "Less than or equal to 20":6070 30

60 (F variable)20 THEN F SINT "Greater than 20":6070 30

Program IV

Line 50 tests variable and if it is less than 20 it tells you so before sending the program back to line 30. Line 60 tells you if it is greater than 20 and then sends control back to 30.

Notice the way we have to use a GOTO after each IF. Not very efficient.

Also notice that while we've got a couple of IFs, we haven't got an exit condition the loop keeps on going.

Program V solves the exit

condition problem by means of a cunning AND.

18 SEM PROGRAM V 20 LET variable=1

30 PRINT variable 40 LET variable=variable

50 IF variable(=20 THEN-PRINT "Less than or equal to 20":5070 30

60 IF variable 20 AND va riable (100 THEN PRINT "Grea ter than 20": 9070 30 70 PRINT "The End"

Program V

Now line 60 has a joint condition and the GOTO only works while variable is between 21 and 99. As soon as it goes over this, the loop ends and the program goes on to line 70.

So now we've got our exit condition — but it's not really a very neat solution, is it? Try rewriting the whole thing using a FOR... NEXT loop. I'm sure you'll agree that it's a lot easier to understand.

Observant readers may have noticed that the condition in line 50 changed from:

IF variable(20

in Program IV to:

IF variable(=20

in Program V

White it makes no difference in this case (variable never gets to 20) it's much better to have every number catered for as in the second case. If you don't follow that, try making line 40 of Program IV read:

48 LET variable=variable+1

and see what happens when you run the program.

In the examples we're using it's fairly simple to see that variable will never be 20, so this problem won't arise.

However in more complicated programs you may not have any idea of what values may emerge.

So make sure you don't leave any "holes" between two sets of conditions, because if you do it's odds'on that the program will find them and bring things to an untimely halt.

Now have a look at Program VI. You should have no difficulty in seeing that the main part of it is a loop that cycles ten times.

IS REM PROGRAM VI

20 variable=0:loopno=0 30 loopag=loopno=1:PRINT

"Loop number ":loopho

48 variable=variable +1 50 IF variable (10 PRIN) "As variable is ";variable ", the loop continues,":607

50 PRINT "As variable is now ";variable", so it end

78 PRINT "There have bee t. ":looping" cycles round th e loop."

Program VI

While our old friend variable is less than 10, the GOTO of line 50 keeps on sending the

HEALTH WARNING:

GOTOs can seriously damage your sanity!



program round the loop. However, eventually line 40 is going to make variable equal to 10 and the condition fails. Now the GOTO is ignored and the program carries on to lines 60 and 70 and ends.

Make sure that you understand what's happening in the program. It should be clear to you that lines 30 and 40 are repeated over and over while variable is less than 10.

Put another way, the loop repeats lines 30 and 40 until variable is equal to 10. Then the loop stops and the program carries on with the next lines.

You can look at Program I in the same way. There, lines 40 and 50 were repeated until variable was equal to 11.

Similarly, in Program V the loop cycled until the exit condition of variable being 100 was reached.

In all these cases you can look on the loop as being repeated over and over again until a certain condition is reached. The loop is repeated until the exit condition is true.

This is quite a useful concept. After all, when we use a FOR... NEXT loop we have to know the number of times it's going to loop. We have structures like:

18 FOR loos=1 TO 188

which are fairly rigid. It's much more flexible to have a loop repeating over and over until it's done the task we want.

The structure would be something like:

REPEAT SOME TASK UNTIL 1713 DONE

This is vasily different from the FOR ... NEXT loop. Here the loop will carry on forever unless its exit conditions ament. And its such a useful loop structure that the advanced Basic in the Electron has it as standard.

You don't have to mess about with GOTOs. You can do

We're exploring them ... to learn how to do without them?

10 REM PROGRAM VII

20 variable=0:loonno=0

10 REPEAT 40 IF variable 400 THEN

ORINT "As variable is ";var iable", the loop continues.

50 loopno:toopno+1:PRINT "loop number ";loopno

oop number flooping 50 variable=variable +t

70 UNTIL variable >= 10 80 FRINT "As variable is now "(variable", so it end

90 PRINT "There have been ":leapno" cycles round the icop."

Program VII

it all with a simple REPEAT... UNTIL loop Program VII, a variant of the previous program, shows it in action.

Here the REPEAT... UNTIL loop is formed by lines 30 and 70. Now everything between those lines will be repeated over and over until variable is greater than or equal to 10. This means in effect, that the loop repeats ten times, then finishes.

One point to bear in mind is that a REPEAT UNTIL loop is always performed at least condition is tested by the UNTIL at the end of the loop.

The program performs all the code up to the UNTIL and then tests the exit condition. If this is met, the loop ends. If it's not, it carries on, sending the program back to the REPEAT.

But, whatever the result of the test, the code preceding the UNTIL will have been processed. Hence a REPEAT ... UNTIL loop always cycles once.

Try changing line 70 of Program VII to:

78 UNIIL variable:-2

Obviously variable is greater than -2 when the loop starts so the exit condition of line 70 is met.

However, the program doesn't know this until the UNTIL of line 70 and ploughs on through the preceding lines.

10 REM PROGRAM VIII
20 total=8
20 REPEAT
40 READ number
50 total=total=number
40 NVIII number=80

TO PRINT total

Program VIII

All the program does is to total up the numbers in the DATA statement and display the result.

98 DATA 12,45,67,897,8

However, notice the exit condition of the loop. It repeats until the variable number is equal to 0. Now adding 0 to the running total leaves it the same, so why bother?

The answer is that the 0 exit

condition is a flag that tells the program when I want the loop to end,

Try changing line 80 to:

B0 DATA 1.2.3.4.5.0

30 DATA 209,365,3,0

and you'll see the flexibility of the structure. The numbers are read and added to the running total until the program finds a 0.

Compare this with using a FOR ... NEXT loop for the same job as in Program IX:

> 18 REM PROGRAM IX 28 total=0

30 FOR loop= 1 TO 4 48 READ number

58 total=total+number 60 NEXT loop 70 PRINT total

88 DATA 12,45,67,897

Program IX

This is a much more rigid program. If you want to change the data line you have to add up the number of items in it and change the FOR ... NEXT loop accordingly.

I think you should see that the REPEAT ... UNTIL is a much better program struc-

And that's it for this month. I leave it to you to try your hand at your own REPEAT ... UNTIL loops.

Last month we used a GOTO to form a mugtrap. Can you rewrite the program using a REPEAT ... UNTIL loop instead?

Repeat the process until you're sure you understand it.

FLECTRON, BBC Model B (any OS. BASIC I/II)

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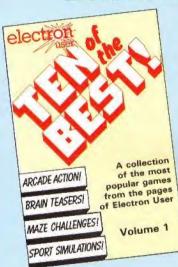
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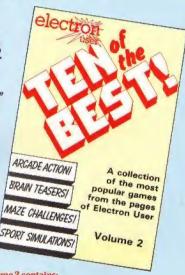
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has there been such a helpful, easy-to-understand guide to BBC Basic

There has been an enthusiastic welcome from users of the BBC Mico and Electron to "Getting Started on BBC Basic". And with good reason. For its author, Mike Bibby, is acknowledged to be one of Britain's leading experts on BBC Basic, and in it he achieves new standards in simplifying the teaching of Basic programming.

The book, which is based on his highly-praised series for beginners in *The Micro User*, takes the reader step by step through the fundamentals of writing programs.

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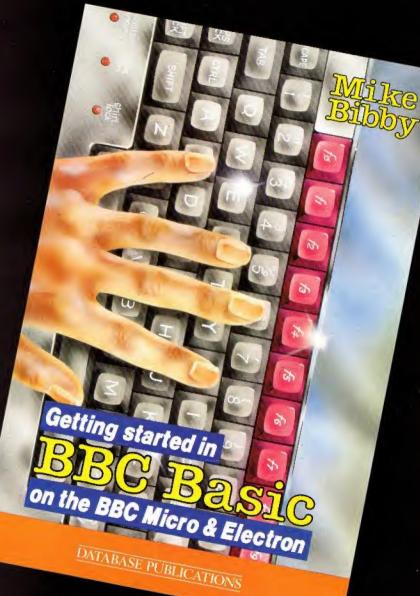
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- Basic ideas printing strings and numeric expressions
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- REPEAT ... UNTIL, the building blocks of loops
- Controlling loops with FOR . . .
 NEXT statements
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The object is simple. You have to collect all the TNT mines, and so gain points, before the timer reaches zero and they explode, taking you with them

As you move around the screen you'll destroy all the

blocks that you come into contact with. Don't worry if you leave one edge of the screen, you'll re-appear at the opposite side

The block you are currently on is capable of sliding horizontally into an empty space, but it doesn't move vertically. If you do try to move it this way your Electron will ianore you.

You can obtain more points by eating the fruit scattered around the screen, but will lose a life if you run into a skull. A bonus man is awarded every 10.000 points.

You'll need a lot of luck and skill to beat the high score.

All REMs can be safely omitted from the listing.

In case you're wondering, *FX200.1 disables the Esc key while *FX202 forces Caps Lock.



PROCEDURES

PROCassemble Store machine code for double height characters.

PROCcharacters Define characters and envelopes. PROCinstructions Print instructions.

PROCinitialise Reset variables for a new game. PROCorid Draw screen.

PROCplay Play game.

PROCget Select mans direction. PROCpause Pauses until SPACE is pressed.

PROCnext Add a BONUS to score and increment frame counter.

PROCdead Lose a life.

PROClocate Find an empty square.

VARIABLES

X%, Y%, N%, M%, P%,

Z%,T%,D,A\$,D\$ General

G% Delay loop counter.

S% Score. L% Lives.

F% Frame number.

Q% Bonus man marker. H% High score.

D% Man's current direction. C% Contents of square man is moving

into.

0% Number of TNT mines to be eaten. MAN\$ String of CHR\$ forming the man.

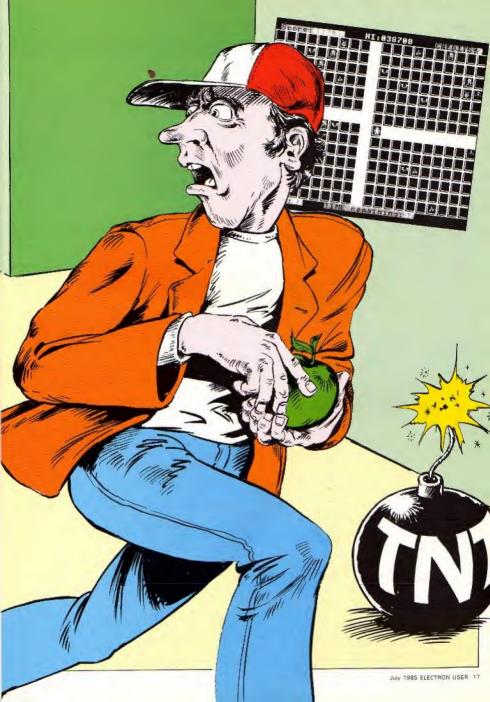
SPA\$ String of CHR\$ forming a blank зацаге

FUNCTIONS

FNs(V%, N%) Formats V%, by adding leading 0 until it has N% digits.

ARRAYS

S%(14,20) Screen contents. Q%250 Machine code storage.



From Page 17

- IM REM TIME-ROWS
- 28 REM BY CARL DUNKERLY
- 38 REM (C) ELECTRON USER
- 48 ON ERROR GOTOZA18
- 50 ≥fx202
- AR #fx11
- 78 ¥6×288 5
- 88 HX=38788 98 DIMST(14, 28) , 01258
- 188 HODE 6 118 PROCassemble
- 120 PROCcharacters
- 138 HODE!
- 148 VDU23,1,0;0;8;8;
- 158 REMARK aain loop ###
- 1AB REPEAT
- 170 PROCinstructions
- 188 PROCinitialise
- 198 REPEAT
- 288 PAFE27=255
- 218 PROCorid 228 +0.
- 238 PROCelay
- 248 UNTILLY=8 DRTX>=6888
- 258 REM984 game over \$84
- 268 COLOUR2 278 JFT%>=&B@@COLOUR129:S
- OUND1.2.18.8: XX=17: YX=4: \$da ta="TIME-UP": CALLdnor
- 288 COLOUR128
- 298 IFSY)HY HY=SY: YY= (5: Y I=18: \$data="NEW HI-SCORE": C
- ALLdnor: FORNZ=1T05888: NEXT 388 XX=12:YX=28:\$data=*An
- other Game (Y/N)?": CALLdiny 318 REPEAT AS=GETS: UNTILA
- \$="Y"ORA\$="N" 328 UNTELAS="N"
- 338 HODE6
- TAR ENT
- 350 REMett run frame tto 360 DEFPROCULAY
- 378 T1=8: X1=18: Y1=8
- 388 PROCast
- 398 K\$=[NKEY\$8: [FK\$()""AN DINSTR("AZ.. ".K\$)()@DZ=ASCK
- 400 IFK\$=" PROCpause 418 MI=XI+(DX=44)-(DX=46)
- : MX=YX+(DX=A5)-(DX=98) : IFMX (IMX=14ELSEIFHY)14MX=1
- 428 IFNX>28NX=1: HX=HX+(HX >1)ELSEIFNX(1NX=20:MX=MX-(M
- 27143 438 CT=SI(MI,NI):FORPI=11
- DGX: NEXT: IFCX=20RCX=450UND1

- .2.7 ECX.3:5%=SX+25+CX
- 448 IFC%=30RTIME>=6000PR0 Cdead: TIME=TX: IFLX=BORTX)=6
- **BRSENDEROC** 458 !FNGT(C1()80R01=440RD X=46) SOUND1.1.25.1: DX=ASC(M
- ID\$(",.",RND(2),11):60TD398
- 468 COLOURS: COLOUR129: IFS 1)=9191=91+10000:11=L1-(L14 6): SOUND1, 2, 188, 18: PRINTTAB
- (38.1):LI 478 PRINTTAB(7.1): FN= (S1.
- 6): TAB (28, 38): FNs (1NT ((ARRA -TIME: / 1883.2): COLDUR: 128: PR INTTAB (XX*2-2, YX*2) SPA\$: SX1
- YX.XXI=0: XX=NX; YZ=MX; SX (YX. XX)=5: COLOUR3: PRINTTAB(XX+2
- -2. YX+2| MAN\$: IFCX=20X=0X-1: IFOX=0PROChext:ENDPROC
 - 488 6010398
 - 498 ENDPROC
 - 500 RENGES pause 446
 - 518 DEFPROCHAUSE 528 TX=TIME
 - 538 REPEATUNTILBET#=" "
 - 548 TIME=TX
 - 558 ENDPROC 568 REMINE get inital dir
- ection ### 578 DEFPROCNET
- 575 VDU 23, [,8;8;8;8;
- 588 #fx21 598 REPEAT: DS=GETS: UNTILI
- NSTR("AZ..".D\$)()@ 600 DX=ASC(D\$):TIME=TI
- 610 ENDPROC
- 628 REM### bonus.next fra ac 410
- 438 DEFPROCHEXT
- 648 TX=(6888-TIME)/188
- **658 COLOUR2**
- 660 XX=15: YX=10: \$data="NE XT PATTERN": CALLdnor
- 678 FORN=T% TO1 STEP-1
- 688 IFTY()8 SX=SX+18+258+
- FX/TZ 698 SOUND&18.-1.N NOD5.1
- 700 COLOURO: COLOUR129: PRI NITAB(28,38) (FMs (N, 2) TAB(7.
- 1) : FNs (51,6) 718 IFSX)=0202=02+18008:L
- X=LX-(LX(6):SOUND1,2,100,10 PRINTTAB(38,1):LZ
- 728 FORD=1T098: NEXT. 738 PRINTTAB(28,38); "88"
- 748 COLOURI28 758 FORNX=1705080: NEXT
- 768 FX=FX+1
- 778 ENDPROC

- 788 REMOND Lose a life ##
- 798 DEFERRICHEN
- BOO TESTIME 818 SOUND1.1.189.18
- 828 | 2=1 2-1
- B30 COLOUR 129: COLOURO: PRI
- NTTAB(38,1):L% 848 1FTY)=6888 PRINTTAR(2
- 8.38): "88" 858 COLOUR128: PRINTTAB (XX
- #2-2, Y1#2) SPA\$
- 868 SX(YX, XX) =8: NX=18: MX=
- 878 COLOURS: PRINTTABINE +2 -2. MX +21 : MAN\$ 888 #fx71
- 898 FORN=110458: NEXT 900 SOUND1.1.1.1
- 918 IFLX()8 ANDTX(6888 PR **OCcet**
- 928 #fx71
- 938 N1=18:M1=8 948 ENDPROC
- 958 REM### define chr\$ ## 968 DEFPROCcharacters
- 978 ENVELOPE1.3.124.-254. -5,2,4,100,0,0,0,0,0,0,0
- 980 ENVELOPE2.2.18.-18.10 -1,1,-1,0,0,0,0,0,0,0
- 998 REM emoty block:=1 1888 VDU23,224,8,63,95,95,
- 95.95.95.95 1818 VDU23,225,8,254,254,2
- 54, 254, 254, 254, 254 1828 VDU23,226,95,95,95,95
- ,95,96,127,0 1030 VDU23,227,254,254,254
- .254.254.2.252.8
- 1848 REM ToT block:=2 1858 VDU23,228,8,8,8,8,14,
- 4.4.4 1060 VDU23,229,0,0,0,0,28,
- 8.8.8 1070 VDU23,230,0,0,0,0,0,0
- .1.1 1080 VDU23,231,0,0,0,0,0,0,0
- .32.160 1898 VDU23,232,1,1,8,8,8,8
- 1100 VDU23, 233, 96, 32, 8, 8, 8
- 9,0,0 1110 REW APPLE & CHERRY=BO NUS FRUIT=4
- 1120 VDU23, 235, 16.8, 12, 16. 8.8.8.8
- 1138 VDU23,236,8,8,8,8,2,39, 114,32,8

- 1140 VDU23.237.98.52.0.0.0 8.6.8.
- 1150 VDU23, 238, 8, 8, 24, 52, 1 14,125,68,24
- 1168 REM SKULL & CROSSBONE 1178 VDU23,240,8,8,8,8,8,8,8
- 1188 VDU23.241.3.6.3.6.6.8
- .0.0 1190 VDU23,242,24,224,24,1
- 2.8.8.8.8 1286 VDU23, 243, 8, 8, 224, 248
- .88.248.224.168 1218 VDU23,244,8,9,8,1,1,1
- 1228 VDU23,245,8,8,8,8,8,8
- .0.17
- 1238 REH MAN=5 1248 VDU23, 246, 8,63,95,94,
- 94,95,88,98 1250 VDU23.247.0.254.38.17
- 4.14.38,2,18
- 1268 VDU23,248,98,98,94,92 ,95,96,127.8
- 1270 VBU23,249,19,18,78,78
- ,254,2,252,8 1280 MAN\$=CHR\$246+CHR\$247+
- CHR\$8+CHR\$8+CHR\$18+CHR\$248+ CHR\$749
- 1298 SPAS=" "+CHR\$8+CHR\$8 +CHR\$18+" "
- 1300 ENDEROC
- 1318 REMANA draw screen ##
- 1320 DEFPROCOFIG 1338 GX=GX+15+(GX()8)
- 1340 FORN=1T03: VOU19, N. 8:0 ::NEXT
 - 1358 COLOUR131 1368 CLS
- 1378 VDU5 1388 GCOLE. 8
- 1398 MOVE538.995: PRINT"HI:
- *+FMs(H%.6) 1400 VOU4
- 1418 COLOUR129: COLOUR2 1420 PRINTTAB(1.30); "Frame
- :"; TAB(13,38); TIME remaini ng: ": TAB(1.1): "Score: ": TAB(30.1): "CREDITS: ":: COLOURO: P
- RINT: LX: TAB (7, 1): FNs (SX.6): TAB(7,30); FNs(FY,2); TAB(28, 30): "60": TAB(0,2):
- 1430 COLOUR128: COLOUR3 1448 FORYX=1T014
- 1450 FORXX=1T028 1460 SX(YX, XX)=1
- 1470 VDUZ24,225



1718 TX=RND(7)+3 1728 FORYX=LIDIX 1730 PROClocate 1748 SX(ZZ.XZ)=4 1750 HOVEXX+64-64+16, 1023-64+7%-16 17AB AY=BND(2) 1778 IFAX=1 8COL0.0: VDU235 .8.236:MOVEXX*64-58+16.1823 -64+27-16: GCOL 8.2: VDU235.8: GCOLW. 1: VDU236 1788 IFAX=2 SCOLE.8: VDU237 .8.238: MOVEXX+64-58+16,1023 -64#21-16: GCOL@, 2: VDU237,8: GCOLe,1;VDU238 1798 NEXT

1788 REM APPLE+CHERRY=BONU

1698 NEXT

S FRUIT

S 1818 TX=5+5#FX:IFTX>28 TX= 28 1828 FORYX=1TDTZ

1800 REM SKULL & CROSSBONE

1840 SUMI=0 1850 PROClocate

1868 IFZXC)8 IF SX(ZX-1,XX

)=3 SUMX=SUMX+1 1878 IFIX<>14 IF SX(IX+1,X

1878 [FIX<>14 [F SX(IX+1,) X)=3 SUMX=SUMX+1

1880 IFXXCOB IF SX(ZX,XZ-)
)-3 SUMX-SUMX+1
1890 IFXXCOB IF SX(ZX,XX+
1)=3 SUMX-SUMX+1
1918 SX(ZX,XX)-3
1928 BODUB,
1918 VDUZ48,245,8,8,10,241
242,8,11,244,243
1948 MOVEXX+64-58,1823-64*
ZX

1950 GCOL8,2 1960 VDU248,245,8,8,10,241 ,242

1970 GCOL0,1 1980 VDUS,8,11,244,243 1990 NEXT

2000 VDU4,20,19,3,4;8;19,2

2010 ENDPROC 2020 REMACA choose a squar

e ###
2030 DEFPROCIocate
2040 REPERT XX=RND(20); ZX=
RND(14); UNTILSX(ZX, XX)=1

2050 MOVEXX:64-64,1823-64:

2040 ENDPROC 2070 REM### double height thr\$ ### 2000 DEFPROCASSEDIE

2898 V=&FFEE 2188 FORN=8T01:P1=91

2100 FORN=8T01:PI=QI 2110 COPT0:.dnor:LDANG:JMP

start

2128 .dinv:LDA+&FF 2138 .start:STA&89:LBA#31:

2138 .start:SIA&8Y:LDA#31: JSRV:TXA:JSRV:TYA:JSRV:EDA# 8:PHA

2148 .loop@:PLA:TAX:LDAdat a, X:GM@13:BEDend:STA&GB::N X:CM#21:BEDend:TAX:PHA:LDX &&B::LDYBG:LDAB18:JSR&FFF1: LDA#23:JSRV:LDA#255:JSRV:LD Y#1

2158 .loop3:LDA&88,Y:EOR&8 9:JSRV:JSRV:INY:CPY#5:BNELo op3:LDA#255:JSRV:LDA#18:JSR V:LDA#8:JSRV:LDA#23:JSRV:LD A#255:JSRV 2160 .loop4:LDA&80,Y:EOR&8

9: JSRV: JSRV: INY: CPY#9: BNE1o op4: LDa#255: JSRV: LDA#11: JSR V: JMP1oop8

2178 .end:RTS:.data:EQUS"

2198 DINEXT 2198 ENDPROC

2200 REMODE score formatti ng 600

2210 DEFFNs(NX,PX):S\$=STR\$
(NX):=STRING\$(PX-LENS\$,"0")
+S\$

2220 REMOON initialise ***
2230 DEFPROCinitialise
2240 GX=105:5X=0:LX=3:FX=1

:01=10000 2250 ENDPROC

2268 REMARK instructions

2270 DEFPROCinstructions 2280 VDU20

2290 COLOUR128: COLOUR3 2300 CLS

2318 XX=13:YX=1:\$data="'Ti me-Bomb'":CALLdnor 2328 COLBUR2

2338 PRINT'' The object of this game is to defuse all the bombs ('TAT'), before the counter reaches zero.

2348 PRINT "A bonus is awarded for time remaining att he end of the frame and for each piece of fruit eaten.

2350 PRINT' However, if you collide with a 'SKULL' ort he counter reaches zero you will lose alife."

2360 PRINT "A bonus MAN is awarded every 10000pointsup to a maximum of six." 2376 PRINT'"You control the e man using the following k eys:"

2388 COLOURS: PRINTTAB(19);
"A"CHR\$13CHR\$18; TAB(18)"
>"CHR\$13CHR\$18; TAB(28); "Z"
2398 PRINT" "SPACE" P

2400 XX=6:YX=30:\$data="Pre ss any key to":CALLdnor 2410 XX=23:\$data="continue

...":CALLdnor 2420 *fx21

2438 A=6ET 2448 FORYX=41029 2458 PRINTTAB(8,YX); SPC(48

2460 NEXT 2470 COLOUR2: PRINTTAB(0.5)

2480 PRINT"As you move aro und the screen you will de stroy all the 'BLOCKS' that you come into contact wit h."

2490 PRINT' If you leave o ne edge of the screen, your ill reappear at the other." 2580 PRINT' The following only applies when you try a nd anye into an eapty space

2518 PRINT'The 'BLOCK' yo u are on can slide left & right, but not up and dow n. If you tryto make it slid e up or down the computerwi Il ignore your command and aove you either left or r

ight instead." 2528 COLOUR3 2538 XX=31YX=38:\$data="Bo

you want the soun':CALLdnor 2540 XX=23:#data="d ON (Y/ N)?":CALLdnor

2558 REPEAT A\$=6ET\$
2568 UNTILA\$="Y"ORA\$="N"

2570 [FA\$="Y"THEN+fx210 2580 [FA\$="N"THEN+fx210]

2598 ENDPROC 2600 REMARA ERROR AND

2618 NODE6

2628 REPORT

263@ PRINT' at line "; ERL

This listing is included in this month's cassette tape offer. See order form on Page 61.

ROLAND WADDILOVE

begins a new series on programming graphics with arcade games in mind

HAVE you ever looked at the latest arcade games and been amazed by the incredibly fast, super smooth, multi-colour, sprite-like graphics?

Wish your programs could have graphics like that? Well it's not that hard.

Over the next couple of months I shall be covering the basic techniques involved in moving multi-coloured characters of any size smoothly round the screen.

The only way to achieve such animation is through the use of machine code, as it runs many times faster than Basic which is too stow.

So to make the most of these articles you will need a fair knowledge of 6502 machine code. But even if you don't, then you should be able to follow the first section which looks at how the screen memory is organised, and you'll have till next month to swot up on the subject.

As many of the arcade games written for the Electron are in Mode 5, this is the one we shall be concentrating on.

Although there are fewer colours than Mode 2, programs run much faster, in fact at almost the same speed as the BBC in Mode 2. So it's a swings and roundabouts situation – do you want speed or colour?

The secret to high speed multicolour graphics is to directly access the screen memory This is the top 6-20k of memory, depending on the mode, from which the TV picture is built up, and is formed from the bit pattern of the bytes stored there.

The operating system is best used as little as possible. Not that there is anything wrong with it, it's excellent, but it simply wasn't designed specifically to run arcade games in Mode 5.

In the OS ROM is a superb routine which will print any character you care to define, in any colour and in any mode at

Machine code can make your games faster, smoother and paint box bright

any pixel (a pixel is the smallest element of the screen display — when you plot a single point, that's a pixell. The calculations it must perform are mind boggling.

The bit pattern must be fetched, then the foreground and background colour found and the bytes required to produce the pattern calculated

This depends on the mode, and whether you are printing at the text or the graphics cursor using VDU 5.

The correct addresses in the screen memory must be found and the data poked in.

A fantastic amount of time can be saved by working out all the data beforehand and saving it. Then all that is necessary is to poke the pre-packaged data into the correct location, using a fairly simple routine.

First we will try to find out how the Electron organises the screen memory. You will need Program I for this.

The memory map of page 128 of the User Guide tells us that the RAM used for high resolution graphics is located between HIMEM and 8-8000, and that HIMEM is a movable boundary.

Try putting the Electron into different modes and printing HIMEM:

PRINT'SIMEM

You can see that more RAM

is required by higher resolution graphics or more colours, and that in Mode 5 HIMEM is equal to &5800.

Type in and run Program I. It prints the alphaber starting at the top left of the screen and then waits for a key to be pressed.

The variable address is initially set to HIMEM, and whenever a key is pressed its value is printed and &OF stored in the screen memory. The address is then incremented by 1.

Run the program a few times and hold down a key. You will see that each character is made up of two strips, each 8 bytes high, and that each line is made up of 40 of these strips or columns.

If you are using a TV and can't see the top line add this line:

55 VOU 30,10.11

Look at the address printed and note when it runs on to the next line. It is \$5800 at the start of the first line, \$5940 at the start of the first line, \$5940 at the start of the second line, \$5A80 on the next and so on. Each line starts \$140 lower than the previous one.

It can be seen from Program I that a Mode 5 character is stored in 16 bytes, two columns of 8 bytes.

Figure I shows the first character position. As each character is 8 pixels wide (in any mode) a single byte must hold the colour information for four pixels.

Also we saw earlier that each line of 20 characters is made up of 40 columns, and since there are 160 pixels across the Mode 5 screen 160 divided by 40 equals 4 – four pixels per byte.

How is the information clody? Program II will help here. The four pixels in the first byte of the screen memory can be set to any of the four colours by pressing the keys 1-4, 1 for the first, 2 for the second and so on.

The value of this byte is printed in hex and its binary bit pattern is shown.

Try altering the colour of the pixels and look for a pattern in the hex value or binary pattern. It doesn't seem to make sense does it?

10 REM FROGRAM I
20 HODE 5
10 address=HIMEM
40 PRINT "ABCDEFSHIJKLMN
DEPSTUMMY?"
50 PRINT TAB(0.10) "Addre
55=5..."
60 key=GET
70 PRINT TAB(9.10): "addr
ess
90 "address=24dress+1
100 GDTO &0

Program (

70 byte%=the first byte of screen memory.

80 Hexadecimal value printed.

110-130 Bit pattern printed.

150-180 Pairs of bits for each pixel printed.

200 key%=code of key pressed-48.

210 Call PROCchange() if keys 1-4 pressed.

screen Sets up screen display, initialises variables. bit(N%) Prints coloured square if bit N% in byte set.

change(pixel) Changes colour of pixel.

Two bits can be used to store the numbers 0 to 3, %00, %01, %10 and %11 in binary. So a byte, consisting of 8 bits can store the colours (0-3) for four pixels.

It would be logical to use the first two bits for the first pixel, the second two for the second pixel and so on. However It's not quite so simple.

Bits 7 and 3 store the colour for pixel 1, 6 and 2 for pixel 2, 5 and 1 for pixel 3 and 4 and 0 for pixel 4. Program II prints the pairs of bits for each pixel near the bottom of the screen.

Press key 1 and the bits 7 and 3 will cycle through the four colours, %00, %01, %10 and %11 in binary. Similarly the others can be changed by pressing keys 2, 3 or 4. Watch the bit pairs run through the colours.

A multi-coloured character could be designed on paper and each horizontal group of four pixels could be set using this program and the data noted. It could then be stored at any position on the screen.

This would be a very clumsy method though. So in a later article in this series we will employ a sprite designer to make it a bit easier.

You should now be able to see why in Program I storing &OF in the screen memory coloured it red. Set all four pixels to red and look at the hex value and bit patterns -&OF and 01, 01, 01, 01.

Maybe it's coincidence, I don't know, but look what happens when all the pixels are the same colour in Program II.

When all are black the byte is ROO, red is &OF, vellow is &FO and white is &FF. See the pattern?

It looks like the binary pattern %00, %01, %10 and %11 of the four colours (0-3). doesn't it? This makes it very easy to remember how to completely colour a byte of memory.

That's all for now. Next month we will look at some simple machine code routines for printing characters.

18 REM PROGRAM II	388 COLOUR 2:PRINT TAB(6.
20 REM By R.A. Waddilove	19) "76543218": TAB (3.24) "73
38 MODE 5	62 51 48": TAB(12.6) 1111
48 PROCscreen	
58 REPEAT	318 FDR 11=1 TO 4
58 COLOUR 2	328 colour %(IX)=1
78 byte%=?HIMEM	338 NEXT
88 IF byteX(16 PRINT TAB	348 ?HIMEM=&F
3.5)"&0"; "byte% ELSE PRINT	350 COLOUR L
TAB(3,5) "4"; "byte1	360 PRINT TAB(12,4)STRING
98 COLOUR 129	\$(4,CHR\$255)
188 PRINT TAB(6,28);	378 COLOUR 129: COLOUR 2
118 FOR 1X=7 TO 8 STEP -1	388 PRINT TAB(1,38)" 1-4
128 PROCEIT(IX)	Change pixel *
138 NEXT	398 COLOUR 128
148 PRINT TAB(3,25);	488 MCVE 8,95: DRAW 1288,9
158 FOR 1%=7 TO 4 STEP -1	5: MOVE 8,458: DRAW 1288,458:
168 PROChit(IX):PROChit(I	MOVE 688,658: DRAW 688,1824
2-41	418 ENDPROC
170 PRINT CHR\$9; CHR\$9;	420 DEF PROChit(NI)
138 NEXT	438 IF (byte% AND 2"N%) C
198 COLOUR 128	OLDUR Z ELSE COLOUR &
288 kev1=SET-49:+FX21.8	440 VDU 255
218 IF keyI>8 AND keyI(5	458 ENDPROC
PROCchange (key1)	468 DEF PROCchange(pixel)
220 UNTIL FALSE	1
238 END	478 colour%(pixel%)=(colo
240 DEF PROCecreen	ur%(pixel%)+1)MGD 4
250 VBU 23,1,0;8;0;8;	480 PRINT TAB(12,4);
260 VDU 23,255,8,126,126,	498 FOR [X=1 TO 4
126,126,126,126,0	500 BCDL @,colour1(12)
278 DIH colour I(4)	518 PLGT 69,8+(11-1),182;
288 DRAW 8, 1823: DRAW 1276	528 COLOUR colour%(I%)
,1823: DRAW 1276,8: DRAW 8,8	530 VDU 255,8.10,10,17,2
298 PRINT TAB(11,2) "Pixel	colour%(I%)+48,11,11
s": TAB(3,3) "Byte": TAB(4,15)	548 NEXT
"Bit Pattern"	550 ENDPROC

Program II

350 COLOUR 1
360 PRINT TAB(12,4)STRING
\$(4,CHR\$255)
378 COLOUR 129: COLOUR 2
388 PRINT TAB(1,38)" 1-4
Change pixel "
398 COLOUR 128
488 MCVE 8,95: DRAW 1288,9
5: MOVE 8,658: DRAW 1288,658:
MOVE 608,650: GRAW 608,1824
418 ENDPROC
428 DEF PROChit(NI)
438 IF (bytel AND 2"NI) C
OLDUR Z ELSE COLOUR &
448 VDU 255
458 ENDPROC
468 DEF PROCchangeipixel%
1
478 colour%(pixel%)=(colo
url(nixell)+1)MOD 4
480 PRINT TAB(12.4):
498 FOR !X=1 TO 4
500 6CDL @.colour%(12)
518 PLOT 69.8+(11-11,1823
520 COLOUR colour%(I%)
530 VDU 255,8,18,10,17,2,
colour%(I%)+48,11,11
548 NEXT
550 ENDPROC

1	1.5800	SEBBB	¥4.9
	55801	8:5869	h = h
	45902	%580A	***
	1,5803	%500F	
	85504	%-580C	
	\$.55 0 5	1.5800	
	25904	2580E	

Figure 1: Memory map of the first character position

8,5807

SERRE

NOW FOR THE ELECTRON

PINBALL ARCADE

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Software Surgery

THE COLUMN THAT TAKES A LOOK INSIDE THE LATEST RELEASES

Screens full of high speed action

WHAT an absolutely brilliant game. This must be the ultimate in high speed arcade action. The sound is excellent and the graphics superb.

The screen is filled with laser bolts, flying debris, brain waves, mutating monsters and robots. It's got to be seen to be believed.

There are nine screens full of various nasties to be disposed of and people to be rescued. As you progress through each screen the number of nasties increase and they get meaner and meaner.

You start off positioned in the centre, surrounded by assorted robots and monsters with nowhere to hide and only a laser pistol with which to defend yourself.

On screen one there are only robots plus a few obstacles. These can be dealt with quickly, in fact if you don't blast everything in sight within about five seconds then you have had it.

Bonus points are gained if you pick up the two humans wandering around.

Screen two starts with ordinary robots, large indestructable robots, pulsating rings, people and more obstacles. After a short while the pulsating rings mutate into machines which hover about the screen firing spinners at you, so speed is essential.

Screens three and four are the same only worse, that is there are twice as many robots and machines.

Screen five is a bit tricky. In addition to all the other

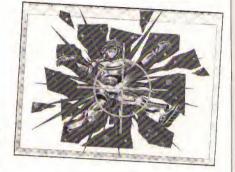
Robotron 2084
Atarisoft

obstacles and nasties, there are giant brains with tiny bodies and legs. These fire thought bolts or brain waves which home in on you and then mutate into another indescribable form.

Six is the same as four, which is a bit of a relief after the struggle to blast your way through five.

Seven is nearly impossible. There are pulsating rings different to the previous ones bouncing about the screen at high speed. They quickly mutate into giant frogmen's heads on tank tracks which emit spinning balls.

Eight and nine are like three



except that there are far more robots - over 40.

There are the usual options available before the game starts – sound on/off, set start level, keyboard/joysticks and a two player game. Once the game has started there is a pause facility so you can stop for a second to get your breath back.

To play Robotron properly you will need a pair of joysticks IPlus 1 type). There is a keyboard option but it is impossible as there are four keys to move and another four

to fire in each direction.

The only way to play is to use the two joystick option. One joystick is for moving and the other to fire. You can actually run one way and fire another.

The problem with two joysticks is how to hold them though. I ended up strapping one to each leg!

Robotron is 8 highly recommended action packed arcade classic. On a scale of 1 to 10 would give it 11 for addictiveness.

Roland Waddilove

Tanks on target

Blitzkrieg Software Invasion

ONE of the most straightforward, yet most addictive, games I've ever had the pleasure to meet, Blitzkrieg is a winner.

Based on the familiar arcade game, the idea is to destroy as many enemy tanks as you can, gaining points in the process, while sustaining as little damage as possible.

You can receive only ten direct hits, then you're a goner. You start out as a private,

and are promoted every 10,000 points. I won't tell you what rank I reached, though

rank is probably the right word.

There are smaller tanks and larger ones out to get you — and watch out, because they don't wait too long before they turn and fire, so get your shot in first.

The graphics, with their 3D effect, are absolutely superb. Although all in green, the detail achieved is striking and the sound effects are also good.

However, your gun position can only sweep from left to right. It seems a pity that it isn't more mobile and can move backwards and forwards to.

A First Byte joystick option



is available, plus a pause facility if the kettle boils at a particularly unnerving moment. There is also a sound on or off option.

The keys are well placed and simple to use – kids from 9 to 90 will find it easy and great fun.

Bey Friend

BE A SUPER SECRET AGENT

Super Agent Flint Potter Programs

THE first thing that strikes you about Super Agent Flint is the reasonableness of its price an example I hope other software houses will emulate

When you load the program, you find that your task is to infiltrate a secret TERD base to capture their evil plans for world domination.

Your only means of escape is a rocket which you must use to dock with a British space station

Happily for those of you who lack astronaut experience, the game assumes that successfully firing the rocket is enough

The adventure begins in an aeroplane over the South Pacific. You've got a parachure and there's a green light showing, so your next move is fairly obvious.

Once you've landed you can start to explore the surrounding countryside. A submarine and a helicopter will help you in your travels, though the cable car is more useful in keeping things dry

The rocket is soon found, but getting it started is something else. You need to find four things to operate the rocket successfully and finish the game.

Although there are only about 40 locations, don't expect these four objects to be easy to find

As is beginning to seem usual with Potter Programs, there's no save-game facility. though there are spelling mistakes

What there is is quite a lot of program protection, including a routine to intercept a Ctrl-Break.

At the price of these programs, the programming involved might be put to better use writing a save-game routine

Overall, although it's in Basic it's quite fast and fun to play. At the price I must recommend it



It was a hard day's night at the bier keller

Auf Wiedersehen Pet Tynesoft

FOR any fans of the popular TV show, this may have a special

The central character in our neat little plot is Oz. the well known loudmouth. Our Oz is put into a variety of tricky little situations over in Dusseldorf. and it's up to you to get him ous of them!

Firstly, at the building site, Oz is under instructions to build as wide and tall a wall as possible, and if you thought bricklaying was easy, try this!

As well as avoiding the

watchful Erics and the falling trowels poor Oz must be careful not to tumble from the

The more wall he builds, the more marks he earns for his night at the bier keller.

At the bier keller, Oz must try to drink as many pints as nossible before 11.30 (clock provided). The more he drinks. the more fearsome the barmaids become and the more numerous the tables to fall

If you're not full of pity afready, you will be when you find he's got to guide himself home as all the street lights in Dusseldorf flicker and die.

He must remember the raute, then try to find his way. through a pitch-black maze of lamp-posts and police cars! Even when he gets to the hut. he's got to avoid the security nuard.

is it really worth going out? You may well ask.

Take the controls and see for yourself.

The keys are easy to operate, and you will find the graphics are well up to standard. But lust allow me a few grumbles, being the fusspot |

First the instructions are a little harsh on the eyes in glaring Mode 2. Mode 1 would be preferable

Second, the game seems to be a little slow-moving in parts. - particularly when the lights are going out. Finally, moreadventurous sound-effects wouldn't come amiss.

All in all, though, a promising game for all ages, with plenty of variety

Bev Friend

Worth its salt

Which Salt? Micro Power

THIS program is designed to be used to help students revising for O level or CSE exams in chemistry. It provides practice in that well-known bane of chemists known as qualitative analysis.

After loading - a long process, but with no hitches you are shown a picture of a reagent bottle containing a salt, together with some information on colour and solubility in water.

You are given 100 points to start with as you begin a series of standard teists. First comes the flame test, which, like all the rest is shown graphically, but with a sentence of explanation as well - vital for those with monochrome mon-

Then you are shown the



Wongo goes to the Wall

IF you want a game with superb colour graphics and reasonable sound effects with an almost irritating addictive quality thrown in, then Wongo is the game for you.

Some grovelling nasties have planted bombs along the length of the Great Wall of China and it's up to bouncing little Wongo the Chinaman to defuse them.

However, it's not as simple as all that, as poor dutiful Wongo also has to avoid a constant barrage of rocks. arrows and a particularly nasty

Wongo -Icon

kind of creature, the jumping

Not only does he have to tace all this, but the Great Wall itself, being a little older than most of us here (except possibly the editor), is in a sorry state.

Parts of it have crumbled away. This leaves a gaping gap which can only be crossed by a rather bloody-minded flying ferry which simply doesn't want to wait for you. Timing is

of the essence.

It's a fast moving game with three levels of difficulty and a pause facility should you develop finger cramp.

The keys are easy to use. the instructions are clear, and you also have the option of having the sound on or off-

If you defuse five bombs without losing a life (you have threel you get a bonus score. There's also an extra life after every 20,000 points. A Hall of Fame is available for good scores.

Keith Young

effect of heat on your salt, with further tests offered if any gas is evolved. Ten points are lost if any of these tests are needed.

Next you find the effect of adding alkali and ammonia. The final set of tests are for anions (the non-metal part of your salt). Again points are lost for using these.

It is now assumed that you will know your salt and you check your result by picking one of the nine cations and one of the seven anions used in the program.

Entering these is done by pressing Space at the correct time, so there is no chance of poor spelling being a stum-

bling block.

When you have selected the salt correctly, a summary sheet gives details of the chemistry of the tests used. You also get a score and a message such as "Seek help". "Boffin" or "Einstein".

A quibble on these messages is that scoring 100 per cent earns you "Cheat".

My other two criticisms are that the prompt "Press Space to continue" is forgotten at times, and more seriously that it is not possible to repeat a test, which can reduce you to wild guessing.

That apart, this is an excellent program. The graphics are tidy and fast, good use is made of the computer's colour and, thankfully, the program is silent.

It is packaged with details of the chemical knowledge required for the program and also a single copy of a worksheet which may be photo-copied.

At £6.95 this is a very cheap educational program and definitely worth getting for home revision.

Rog Frost

Games in Basic

Games Collection Century Software

THIS is a sparkling collection of 20 strategy and arcade type games, all written in Basic for the Electron. An accompanying book gives full instructions and detalled descriptions explaining how the programs

ElkMan keeps your ELKMAN is a sideways ROM designed for use with an ROMs in order ROM expansion

ElkMan Sideways ROM Manager Slogger

*PROMS which lists all the ROMs present, their state and size.

ROMs can be in one of three states. They are either on off or killed, *OFFROM and *ONROM can be used to enable or disable a ROM.

If it has been disabled it will respond to any commands and cannot be used. This is useful if two ROMs have the same name for different commands. The offending ROM taking the command can be switched off.

Even though a ROM may be off it can still reserve valuable memory. *KILLROM is equivalent to physically removing a ROM. I found it useful for disabling the Plus 3 when playing games on tape.

when playing games on taps.
*PEEK is a memory lister which can be used to display any section of memory, even sideways ROMs. The output is

in hexadecimal and Ascil.
*POKE will place a series of bytes or a string anywhere in manner.

ElkMan contains a complete 6502 disassembler, which again is capable of operating on sideways ROMs. The hex address, object code, mnemonics and Ascii codes are listed.

There are several commands which operate on sideways RAM. These can clear the RAM if fitted, load it with data from memory, tape or disc, and save it to memory tape or disc.

ElkMan is well written and simple to use. The documentation is excellent. It comes with a very smart 21-page manual which explains fitting and use in a clear and easy-to-read manner.

Even if it's the only ROM you have, you'll still find most of the utilities useful. I can recommend ElkMan to all serious Electron users.

Roland Waddilove

work. However, although there is a great variety of arcade games their speed is generally slow.

board such as Sloquer's own

Rombox, Inot the Plus 1), and

is identical to the ROMs that

BBC owners have been using

so needs to have priority over

all other ROMs present to

operate properly. This means

that it is best placed so that it

appears as ROM 15 to the

socket on Slogger's Rombox

achieves this. You'll have to

check the manual on other

which means that all its

commands are available while

another ROM is in use, using a

be used within a Basic

using View I can test each

function without leaving the

RQMs 16 commands and their

syntax. One of the simplest is

These commands can even

While writing this review

*HELP ElkMan reveals the

ElkMan is a service ROM.

Placing it in the rightmost

operating system.

customs

* command.

word processor.

ргодсать

ElkMan is a ROM manager

Their appeal is not great compared with the more sophisticated machine code games available, but they do provide a good insight into programming games in Basic.

It is an intention of the publishers that users would use the listings to pick up expert hints on programming their Electrons. The variety makes up for any loss in guality.

The strategy games are not affected detrimentally by the fact that they are programmed in Basic and not machine code. Speed of presentation and response is not important.

The programs are available elsewhere in various forms; the ideas are not new.

This collection enables users to find out how the programs work so I would seriously recommend it for budding programmers.

Euler's Touring Knight is a particular favourite of mine. The problem is to move a knight about a chess board calling in at each and every square.

The computer is programmed to demonstrate a solution, then the user can try

One of the other programs. Robotank, requires Logo-type commands.

Ace High is a patience card game. Instead of manipulating your own pack you press a letter to deal and another to move the cards.

I think I prefer to use real cards, but the simulation is a good one.

I can recommend this collection for those people who wish to increase their powers of programming by seeing how others do it.

John Woollard

Revision aid

Where? Micropower

THIS is an excellent little program for testing general knowledge of places, rivers, cities, hills etc in Britain.

The format is simple. A place is indicated on the map and a choice of four answers is given. The user presses the number key corresponding to the answer chosen.

If the answer is wrong the correct answer is given. After 10 questions the score is displayed. It is based on the number of correct answers plus the speed of response.

It is not stimulating enough to teach on its own, but it is a good program for revision.

John Woollard

OVER the next few months we'll be looking into the special functions called *FX available to Electron users.

Before we start finger tapping I'll explain the jargon. Then we'll have a look at some of those *FX commands which will improve your programming powers.

When your Electron is switched on a lot of short machine code programs are transferred into the RAM and values entered into specific locations in memory.

Those programs and values determine how the computer will behave under certain conditions

For example, there are two locations whose contents determine how long the flashes of the flashing colours last. That is, the duration of the flash is stored in two specific locations.

If we knew the exact place of these locations the we could change them and so affect the way our computer behaves.

Also as the Electron and its sister computers after, the size of these machine code programs will change. Therefore the places in memory where these programs start and various locations used will change.

Acorn computers are provided with the *FX function so that if such changes take place our present programs will still be able to run on all future machines.

When people talk of *FX they also talk of OSBYTE and CALLS. CALLing means going to a particular piece of machine code program, doing something and then returning back.

The operating system of the computer is nacked with short programs that do many wonderous and seemingly trivial, yet vital, jobs such as putting a letter on the screen or reading a tape file.

All such routines are given names or are grouped together under one name. They're listed on page 229 of the User

OSBYTE is one family of programs called through one particular memory location &FFF4. The "FX command is designed to call these OSBYTE routines.

So what can the OSBYTE

Call up the mag and unleash the that lies in your

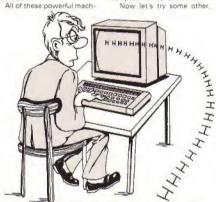
JOHN WOOLWARD begins a new series about those special functions called *FX

programs do? There are a potential 256 calls so their action is wide and varied.

They range from asking the computer to wait for vertical synchronisation of the screen to a program that will reset all of the function keys of the keyboard.

necessary to write them as part of a program, they can be entered directly. In every case Return has to be pressed at the end of the line.

Type *FXO and press Return to reveal the operating system that you have in your computer. Mine is OS 1.00



*FX 12,1 and *FX 11,1. A good technique for fast moving arcade games - and a good trick to play on friends!

ine code programs can be called from your Basic program using *FX.

In a way *FX is the magic word that allows you to unleash the power of the machine code routines in the Electron's ROM.

Enough of this theory, let's try our first "FX call.

At the moment there's only one version of the Electron operating system on the market, but we can check our own by using *FXO.

With all *FX calls it is not

rather more useful, calls.

You can, for instance, revalue the flashing colour mark state - that means change the speed at which the flashing colours flash.

First put some flashing colour on the screen by typing

V0U19.1.12.8.8.8.8

That will change the white writing to flashing blue and yellow. Now try:

#FX9.1

You will notice that the blue stays on the screen for the slightest fraction of a seond one fiftieth to be exact. To change the duration of the second colour, yellow, we use *FX10.

Type:

\$811.3188

Now the vellow will stay on the screen for 100 fiftieths of a second which, if my maths is correct, is two seconds.

We can use this technique to create an interesting title page for a program as illustrated in Program I.

First, the actual colours of the screen are changed. The background is made red thut any colour could be chosen! The program's title and author are then printed in flashing red and cvan.

The information about the program is printed in flashing evan and red inorice the difference!)

When the program title is red, which is invisible on the red background, the program information is a visible cyan. When the colours change the information becomes invisible and the title visible.

If the flash rate was not changed with the *FX calls of lines 60 and 70, then the information and the title would alternate too quickly.

By changing the rates the title is seen for two seconds. then the information for five saconds

The display gives the appearance of action, yet the computer can be carrying out some other task such as reading data or loading cassette files.

It's also possible to com-

ic word power micro!



bine the change in flash rates with graphics to create simple animation.

There are three points to be noted about *FX commands:

The numbers following the *FX command are integers in the range 0 to 255. All other numbers will have no mean-

 The commas may be omitted from between the numbers but there should be a space. I will continue to use commas to make the presentation clearer.

 None of this month's *FX commands affect the Break key. Pressing Break will nullify the previous *FX calls and return the micro to its original state.

To convince yourself you know what's happening, try same more combinations of *FX9 and *FX10 and then use Break to return the colours to their standard flash rate of half a second on, then off.

Now let's investigate *FX11 and *FX12. These calls affect the response of the Feyboard

The first determines how long a key has to be pressed before it starts to auto repeat.

The default time is 50 hundredths of a second. This means that the key must be held down for 50 hundredths of a second before the auto repeat starts.

Typing *FX11,100 makes the micro wait one second before auto repeating. *FX11,0 switches off the auto-repeat altogether.

If I'm writing a program for physically handicapped users or for the very young I find it useful to use *FX11.0-*FX11.100 also helps.

*FX12 is used to set the auto repeat rate — that is the rate at which the following letters are placed on the screen once the repetition has actually started. It is normally eight hundredths of a second.

Try entering *FX12.1 and *FX11.1 and then typing a single letter. It's very difficult because the computer will type a letter for each hundredth of a second the key is held down.

This is a very good technique to use in fast moving arcade type games where you want the computer to respond continually to the holding down of a key. It's also a good trick to play on someone.

*FX12.0 resets both values to their default setting. Hit Break if you can't manage it.

Finally let's look at a *FX command which is not in the User Guide. *FX229.1 causes the Escape key to stop working.

Try this out on your computer. Press Escape and see that the response Escape is printed. Now, enfor *FX229.1 and then press Escape. It doesn't work! Enter *FX229.0 to return the key to

its normal action

We can now try this in a program. Program II will continue to count until the letter S is pressed. Pressing Escape will not stop the program.

Use of *FX229.1 can be part of security measures taken to prevent others from breaking into your program once it is running.

To sum up, this month we've seen how *FX calls can affect the actions of the Electron.

*FX9 and *FX10 changes the colour flash rate. These were used to create a special effect for a program title.

*FX11 and *FX12 change the auto repeat action of the keys. Table I sums it up.

 Next time we'll take a closer look at some other calls that affect the keyboard and I'll show how they can be used to create better programs.

18 RSM PROGRAM 1 20 MODEL 18 PROCLITIE 40 END 50 DEFPROCLITIE

68 *FX9,250 76 *FX18,99 80 VDU19,0,1;0;

90 VOU19.3,0:0; 100 VOU19.1,9;8; 110 VOU19.2,14:0;

120 COLOUR1 130 PRINTTAB(9,11); Progr

an Title*
140 PRINTTAB(9,13): "Progr

a Author"

160 PR:NTTAB(4,6); *This w riting should contain"

170 PRINTTAB(4,8); "detail s of the organa and"

188 PRINTIAB(4,18); "how i

t can be used. While" 190 PRINTERB(4,22); "it is being displayed the"
288 PRINITABI4.141: "the c

omputer can be working"
210 PRINTIAB(4,16); on other things such as"

228 PRINTTAB(4,181; "reading data and initiating" 230 PRINTTAB(4,20); "varia

bles. The 'flashing'' 240 PRINTFA8(4,22);'disp!

ay can include graphics" 250 PRINTIAB(4,24): for be

used while the computer"
250 PRINTTAB(4.26); "is La

ading another program."
270 PRINTIAB(4,38):

288 COLOUR3 298 MOVE:88.188

300 DRAW100,900 310 DRAW1100,900

320 DRAW1180,108 330 DRAW180,188

348 ENDPROC

Program I

10 REM PROSRAM II 20 *FX229.1 30 number%=0

40 REPEAT 50 PRINT pumber 2 68 number I=number I+t 78 gets=GETs

88 UNTIL cet#="5" 98 #FX229,8

Cali	Units	Detault	Effect
#FX 9,n	1/58 sec	52	1st flasking colour duration
#FX 10.n	1/50 sec	25	2nd flashing colour duration
#FI 11,0	1/100 sec	58	Delay before auto-repeat begins
*FX 12.n	1/100 sec	8	Length of auto-repeat

Table I: The story so far

EVERY now and then something comes into the Electron User offices and there's a scramble for it.

Having used and been impressed with Cumana disc drives on my BBC Micro lin the dark old days when I used to work for The Micro Userl I made sure that I won the latest

My prize? The Cumana floppy disc system for the Electron

It consists of an interface cartridge, lead and either a 51 or 31 inch disc drive with its own power supply.

A second drive can be added if required, again of either size.

The cartridge, which contains among other things, the interface software, fits snugly into one of the slots on the Electron's Plus 1,

The lead, which, unlike on other micro products, is of adequate length, goes from this to the chosen disc drive.

Setting the system up was easy. Even if it hadn't been obvious what went where the user guide supplied with the system gives more than adequate instructions.

So five minutes after receiving it I had a working disc system for my Electron. On the screen was not only the

Cumana DISK System

message, there was also the date!

The next few hours were spent exploring the commands available under the system. The more I saw of it, the more I liked it

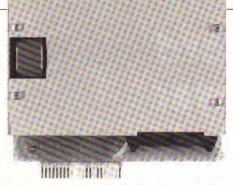
Using the Cumana DFS, the familiar LOAD and SAVE still work, except now programs are saved to disc, not tape. The increase in speed and reliability this brings has to be experienced to be believed.

It's more than just a



You can save £45 on the Cumana floppy disc system with a special offer only available through Electron User.

Full details on Page



The Cumana floppy disc system for the Electron:

It's an impressive piece of work

super-fast cassette, however, Because the saved programs or files are on a disc, not a tape, you can access a file you've saved without having to read all the previous programs.

This gives the system enormous flexibility and with it come a whole host of commands and utilities to take advantage of this.

Files can be copied, renamed, and deleted with ease, while *CAT gives you the name of all the files on the disc, instantly

One whole category of commands is given over to organising and analysing these files, allowing operations that would be impossible or impractical on tape.

Also the system supports random access files vital for more advanced and flexible databases

Before a disc can be used by a disc system it has to be formatted. All this means is that the disc is magnetically organised so that data is stored on it in the way that the DFS expects.

The trouble is that there is no standard format, discs that work on one DFS not working

The Cumana DFS has what is known as a double density format, but it's not the same as the Plus 3's double density format. Nor is it compatible with the Acorn DFS for the BBC Micro.

This could be a problem, but supplied with the system comes a disc full of utilities to deal with the situation.

It's these utilities that give the ffexibility that makes it a winner, allowing it to use discs written on both the BBC Micro and on the Plus 3

With them you can copy files from a Plus 3 or BBC disc onto your Cumana dises.

Not only that, but you can format and write to discs that can be used on the BBC Micro. No other DFS has this adaptability and compatibility.

As if that wasn't enough. the utilities disc also has a verify program - to check discs and a disc editor for more advanced users.

Even with the above features, to think of the Cumana Floppy Disc System as just a DFS would be to underste it.

Not only does it have all the facilities you'd expect of a DFS, it also has a built-in real time clock and ROM socket for an additional ROM such as Addcom or Starmon.

Add to this that the maximum length of files is a massive 64k and the fact that the Cumana DFS doesn't use the Electron's memory (allowing easy tape to disc conversion) and the system becomes even more impressive.

It's a splendid, thoroughly professional piece of work.

The manual is comprehensive. if a little formal in parts, and the system does what it sets out to do and does it well. The obvious question is how it compares with the Plus 3.

The answer is, very well indeed. While not having the complexity of the Plus 3's directories and pathways, the filing system, with its 10 letter filenames and use of wildcards, is more than adequate for the home user.

When you throw in the real time clock, the ROM ability and the flexibility in the disc formats that can be read, then it comes out a clear winner.

There are only two drawbacks that I can think of The first is that you have to have a Plus 1. I'm not sure if this is a drawback, as I think most people who want to expand to discs will already have one of these excellent bits of kit.

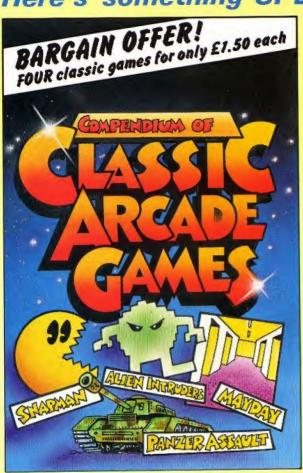
The second is that there is no utility that allows you to copy from your Cumana formatted discs to discs that will work on a Plus 3.

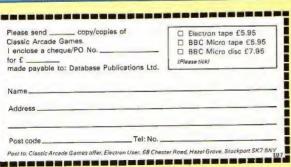
So as things stand, you could use your mate's Plus 3 discs but you couldn't copy your masterpieces on to a disc he can use.

Having said that, I don't think it will be long until someone does just that.

To sum up, it's a versatile, powerful piece of equipment that I recommend wholehearterfly Nigel Peters

Here's something SPECIAL from







We've commissioned four rip-roaring games for the Electron and BBC Micro

Three of this highpowered collection
are top-rate machine-code
versions of arcade classics
and the fourth is a
thrilling real-time
adventure game.
There's hours of
enjoyment and something
to suit everyone in this
unique value for money
collection

SNAPMAN – Guide your man through the maze as he munches energy pellets and avoids hostile aliens

ALIEN INTRUDERS -

With only your laser for protection you must destroy the waves of aliens who threaten to engulf you

PANZER ATTACK – You are a tank commander engaged in vicious combat against encircling enemy forces

MAYDAY – A futuristic adventure! As captain of an interstellar cruiser you must guide the sole survivor of a stricken space freighter through the wreckage of his craft. If you fail to recover those vital medical supplies a whole planet is doomed!

SCRAPBOOK

SCRAPBOOK is the feature that contains a selection of all the short, simple programs sent in by our readers.

It's where we keep a record – our scrapbook – of all the interesting little routines that don't end up in the Notebook or in Program Probe but are too good for us not to share.

This month it's very much a graphics show. Next month
who knows? It's up to you.

So if you enjoy messing about with your Electron and want to share your discoveries with other Electron users, send them in to us.

Sounds familiar? Alankerr

18 REM MOONLIGHT SONATA

28 MODE 1

38 VDU 23,1,8;8;8;8;8;

58 COLOUR 2

SE PRINT MOONLIG

HT SONATA BY ALAN KERR*
76 COLOUR 3:PRINT '''
AND BEETHOVEN"

88 COLOUR 2

98 PRINT

WHAT SPEED?"

188 COLDUR 4

1/18"

128 COLOUR 2

130 PRINT ' FAS

T/SLOW"

148 COLDUR 3

150 INPUT TAB(14,18);Y 160 FOR X=1 TO 160 STEP 4

178 READ D: SOUND 1,-15,D.

Y: NEXT X

180 DATA 28,48,50,28,48,6 6,28,48,58,28,48,58,32,48,5 8,32,48,58,32,52,68,32,52,5

8,32,48,68,32,52,68,32,52,6 8,28,44,68,28,48,68,28,44,5 6,28,48,68,48,48,48

Colour graphics from Merton Court school

10 REM BOXES 20 REM CLASS J.4 HERTON

COURT SCHOOL, SIDCUP

38 MODE 5

40 VDU 23,1,0;0;0;0;0; 50 GCOL 1.1

50 GCOL

60 FOR X=0 TO 450 STEP 1

78 HOVE 8,8

98 HOVE K.X

100 DRAW 900-1,1

120 DRAW 988-1,988-1

138 DRAW 8,988

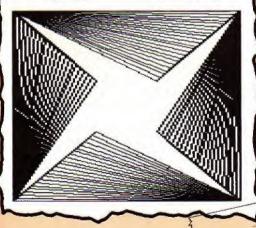
140 DRAW 1,980-1

168 DRAW X,1

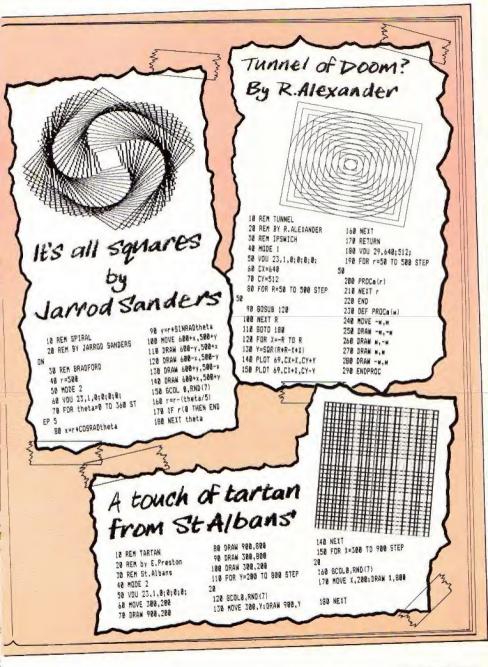
170 DRAW 8,0 180 DRAW 450.0

190 NEXT X

200 REPEAT UNTIL FALSE



Send your programs to Scrapbook, Electron User, 68 Chester Road, Hazel Grove, Stockport SK7 5NY



MAVIS mole, Martin the manic mole's girlfriend. has been wrongly arrested for leaking documents to the newspapers.

Help Martin collect the 11 jewels needed for her bail by guiding him through a maze of melting platforms, ice, holes, conveyor belts and invisible platforms.

In each room is a single jewel. When you have collected this a door to the next will open. You'd better be quick though. There's not much time, so get cracking!



Help Martin and Mavis out of their predicament in M.P. O'DONNELL's fast moving maze game



VARIABLES

X%,Y% 0X%,0Y% jx%,jy% room% jewels% mole% omole%

Coordinates of the mole. Old coordinates of the mole. Coordinates of the jewel The room you are in. Number of jewels collected.

Character number used for mole. Old character number used for mole. The character used for the mole.

The character used for Mavis. mole\$() Shows whether you have the jewel. mavis\$ gotone%

PROCEDURES

PROCehars. **PROCinit PROCscreen** PROCPlay

PROCjump **PROCfall** PROCcheck

PROCinstruct **PROClives**

PROClost PROChang PROCeage PROCWOR PROCtune PROCtune2

PROCpause PROCskill_level

Defines envelopes and characters. Defines variables Draws screen.

Main procedure, tests for keys and moves

Makes the mole jump. Makes the mole fall. Checks to see if you are touching the

Prints instructions Tests to see if you have lost all of your

Tells you that you have lost all your lives. Makes the mole explode Opens the cage surrounding Mavis. Tells you that you have won.

Plays the tune when you free Mavis. Plays the tune when you have lost all your

Pauses the game until you press R. Waits for you to input a skill level.

Manic Mole listing

18 REM ** MANIC HOLE **

28 REM By M.P.D'Donnell 38 REM (c) Electron User

48 ONERROR IF ERR=17 RUN ELSE MODE6: REPORT: PRINT" a

t line ": ERL: END

58 DIM moles (4): v1=1

68 +FX218.8 78 PROCchars

88 MODE4: VDU23: 8282: 8:8:

#:: PROCinstruct

98 REPEAT

100 rope%=1:jewels%=0:liv est=3:ootoneT=FALSE

118 PROCinit

128 MODES 138 PROCscreen

148 VOUS 158 REPEAT

168 PROColay

178 UNTILIOSTZ=TRUE OR WO nX=TRUE

188 IF wonI=TRUE PROCtune : MODE4: VDU23: 8282: 8: 0: 8:: PR

198 IF lostX=TRUE MODE4: V DU23;8282;0;0;0;:PRDClost

200 UNTILE 210 DEFPROCCHars

228 VDU23,224,8,8,14,31,1 19,119,38,14

238 VDU23.225.31.27.59.93 ,15,26,17,51

240 VDU23,226.8.8,8,14,31 .119,119,38

258 VDU23,227,14,27,39,31 .31.14.4.12 268 VDU23,228,8,8,112,248

.238.238.128.112 278 VDU23, 229, 248, 216, 228

,188,248,88,136,284 288 VDU23,238,8,8,8,112,2



Classroom Computing on the Electron

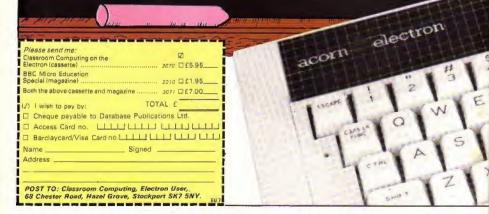
To meet the ever-growing demand for educational programs on the Electron, one of the best-selling educational packages for the BBC Micro has now been adapted and enhanced for Electron users.

Classroom Computing on the Electron consists of 15 full-length programs, all specially chosen to combine educational validity with sheer good fun.

They range in scope from pre-reading to sixth form maths, and each has been thoroughly tested in the classroom.

The original BBC Micro version was warmly welcomed by teachers and parents, and reports that have come in from all over the country show how well they have proved themselves, both in the school and at home.

Now, in this new version, you can help turn your Electron into a valuable learning centre.





MATHS TRIO

Three invaluable elementary maths programs, which give the child guided practice and also graphically demonstrate the reasoning behind the sums.

Tuadd: Teaches from to add up two digit numbers, including carry and is illustrated with animated graphics. At various stages in the addition the child has to tell the Electron what to do next.

Tusub: Covers subtracting two digit numbers where the units 'won't go'. The Electron shows the subtraction in all its stages with graphics designed to illustrate the reasons behind each stage.

Tumult: Helps with elementary multiplication of two digit numbers – in particular where there are 10s to carry.

Calculator: Sums at a stroke! We turn your micro's screen into an easy-to-use calculator.

Table Mountain: Despite ever-changing fashions in maths teaching, tables still have to be learned. This program adds a lively new dimension to what is all too often tedious rote.

Gottit!: An intriguing two player word guessing game packed full of educational potential. Has three levels of difficulty.

House: Gentle, pictorial word, number and colour recognition for the very early reader or for those with learning difficulties.

Gallery: Based on a shooting gallery, this typing tutor will not only have parents, teachers and children touch-typing with ease — it's fun, tool

Whatnumber?: "I'm thinking of a number" is a well known classroom standby. We've taken it much further inthis computer version, giving children far more flexibility in their strategy.

Bridge Breaker: Find the hidden word before it is too late. This is an exciting and novel way to reinforce vocabulary and spelling skills.

Snap: Practice vital pre-reading skills with this letter and number recognition game. Also helps develop coordination.

Manipulation: This is a compulsive and thoughtprovoking maths game. Given the four rules of number and three integers to work with, how close can you get to the target number?

Matrices: Takes the calculations out of matrix manipulation, leaving the student free to understand the underlying concepts. To obtain the fullest benefit from this program see The Micro User Education Special.)

Hidden Answers: Designed to help primary school children understand a maths learning technique called mapping maths. If explores the ideas of mapping with the use of simple number bonds.

Curvefit: Drawing lines of best fit between points, this program will find applications from the infants' class to the sixth form

HOW HO I HE CLEAR

YOU can go for gold with the MICRO

Fancy pitting yourself against the world's best at this summer's Olympics?

You can do so without going anywhere near tos Angeles — with the most challenging package of programs of 1984.

MICRO OLYMPICS is more than a game. It's a brilliantly written collection of ELEVEN track and field events.

And because we know we're going to sell many thousands of them we've brought the price right down — to just £5.95.

Ever imagined yourself as another Seb Coe? Then try to run against the world record holder at 1500 metres. And if that distance is too much for you then there's always the 100, 200, 400 and 800 metres to have a go at.

Not much good at running? Don't worry, MICRO OLYMPICS has many more challenges for you. Why not try your skill at the high jump or the long jump?

And if you can't beat the computer at running or jumping then you can always throw things around in frustration! The trouble is that it's just as hard to be a champion at the discus, the hammer or the javelin.

And the pole vault takes the event to new heights!

Yes, it's fast, furious fun, pitting yourself against the world's best times and distances on your micro.

You may not be another Steve Ovett or Alan Wells, but with practice you COULD become the Micro Olympics Champion!

Also available from WH Smith and all other leading stores





Send for it today





Name Address

Post to: Micro Olympics offer, Database Publications. 68 Chaster Road, Hazel Grove, Stockport SK7 5NY

EU7

From Page 33

48.238.238.128

298 VBU27, 231, 112, 216, 229 .248.246.112.32.48

300 VDU23.232.136.255.255

.185.78.255.255.128 310 VEU23,233,234,170,178

.239.8.8.63.8 328 VBU23,234,224,84,64,6

4.0.54.224.64 338 VDU23, 235, 8, 28, 42, 517

.87,42,28,8 349 VDU23.236.28.28.28.28 .29.28.28.26

350 V0623,237,255,255,102

0.5.9.9.8. 370 90023,239,14.27,39,31

,31,46,50,8 388 V8823,248,255,37,189,

181,189,38,255.255 398 VBU23.241.255.187.179 .187.187.145.255.255

488 VD823.242.255.255.185 .70,185,70,255,255

418 VBU23.243.0.54.127.12 7,127,62,28.8

400 VDU23,044.8,08.60.008 .239.62.28.8

430 VDU23,245.0.28.54.75. 62,28.8.8

448 VEU23,246,8.8.12.24.1 6.49.0.8

458 VBU23.247, 8,32,48,16,

24.8.8.8 468 ENVELOPS: 1.8,-8,8,4,

4,4,126,0,0,-126,126,126 470 EMVELOPE2.0,6,50,0,20 .-8.50.0.2.0.0.0.0

458 aple#(1)=CH8#774+CH8# 8+CHR\$18+CHR\$225

498-moles(2)=CHR\$226+CHR\$ R+CHR\$16+CH6\$277

580 moles (3) =CHR\$378+CHR\$ B+CHR\$1@+CHR\$229

510 acle# (4) = CHR#230+CHR# 8+CHR\$18+CHR\$231

520 Floor \$= CHR\$232

538 roof #= CHR#237

548 word\$=CHR\$233+EHR\$234 550 jewel#=CHR#238

560 maviss=CMR\$225+CHR\$10 +CHR\$8+CHR\$239

528 ENGREDO

588 DEFPROCISIO

598 10-64: YN=108

600 0x%=x%:0Y%=Y%

410 mole%=3:omole%=mole%

640 jueping%=FALSE

568 killed%=FALSE

528 highest tefal SE

190 DEEPROCSCREEN

7:0 IF room%=4 VOU23,242, 255,255,85,170,95,170,85,17

120 IF rona5e12 VB8251242 255,255,85,239,17,153,85,7

738 IF rose%=11 VBW03.042 .255,255,255,251,129,251,25

748 IF roomX=1 DE roomX=2 OR room%=1 OR room%=5 OR r contes OR room; =9 OR room;= 18 VBU23, 242, 255, 255, 185, 78

TAR STALA

1 iPwels%

900 VDU03:8090:0:0:0:0:

RAW788.896: DRAW788.958: DRAW 472,950: BRAN492,898

age PRINTTABIB, () "JEWELS"

848 PRINTTAB((5.3); 11 vest

350 COLDURY

IABUS.5): {logs::FCRP1=1 TO 17:PRINTTAB(Pt.5)roof#:NET

BIB, PX) #1gorf; TAS(18, PX) #1c or \$: NEXT

889 IF ragak=1 RESTGRECIT

918 IF roce%=4 RESTORE219

928 IF room%=5 RESTOREZZE

678 stenZ=1:faringZ=7 538 lost%=FALSE; won%=FALS

658 falling%=FALSE

580 time%=782:flag%=0

DORPORA BPA

5. 255, 255

.185,78,755,755

750 IF room%=5 DR room%=? VOU23, 242, 255, 255, 199, 191. 191,191,255,255

TTO VOUA: CLS

198 COLOURS: PRINTTAB (0.3)

810 GCDL 8.3:MGVE492.896:0

920 COLOURS

:SPE (D) "TIME": SPE (2) "LIVES"

SAR PRINTTABLE.51:floors:

970 FD8P%=6 TO 30: FRINTIA

890 IF roomX=2 RESTORE215

900 IF room%=3 RESTORE216

938 IF room%=s FESTORE202

940 IF roca%=7 RESTORE224

950 IF round=8 RESTORE207

Pap-12 room1=9 RESTORE229

978 IF "gon"=10 RESTORE23

PSB (F room%=1; RESTOREZ) 998 IF room%=12 RESIDRE23

1888 SCOLW. 2: VDUS: READ 1:3 . AVI. 11. di: IF getone I=FALSS

MOVE (T.) y %: PRINT Jewel # 1010 40419, 1, 22, 0, 0, 2, 19.2 . 31. 8. 0. 8. 19. 7. 41. 8. 8. 8.

1000 VOUA

1030 COLOUR :: REPEAT: READ : T. VX.12: FORGLAXX TD x141X:F RENTEABLEX, VALCHESCACEMENT: GNIBLADEL AND VOESS AND IN-

1848 IF romeX=12 COLDUR2:P RINITAB(15.9): mavis#: TAB(14 .51CHR\$248+CHR\$241:5COL8.2: BOVE922, B32: DRAW922, B58: HOV E992,832: DRAW992,850: MGVEB9 2,828:DPAMS92,800:8COL3.1:M QVE910,764:08AW1080,764:FOR PY=920 TO 1000 STEP 22: MOVE

PY. 7AGE BRAWPS, A78: NEXT 1858 VOUS 1080 SCOLJ. 2: MOVE&4.128: PR

[NImolef(3]

1878 IF room%=9 75919,1.8. 0.0.0

1080 IF dotone %= TRUE VDU4: PRINTTAB(18,28)" ": TAB(18,2 91" ": VDU5: MOVE1100.60:600L 8.4%:PRINTwords

1898 ENSPROC

tina prepancolav

1118 -2=8 1129 IF INKEY (-S&) PROCeau

1138 flack=flack+1:IF flac

TeskillY flany=1 1140 IF time%>504 SCOLB.7: MOVEtimeZ. 980: DRAWtimeZ. 946 : IF flag%=1 time%=time%-2: I

F time2=504 k:11ed2=TRUE 1150 IF lives%=0 lost%=TRU E: ENDPROC

XX=XYD:XX=XXI GAL:

1178 cacleY=acleY 1190 IF YX164 Willed%=TSUE : GOTO1238

:198 IF jugging%=TRUE AND notonel=FALSE PROCeheck: GOI 0 1390

1000 IF jumping%=TRUE AND potene%=TRUE SOTO 1390 1018 IF falling%=TRUE AND

motone%=FALSE_PROCcheck:GOT 0:488 5220 IF falling%=TRUE AND

gotone%=TRUE 80701480 1230 IF killed%=TRUE lives I=livesN-1:PROChano:PROCliv

From Page 37

es

1248 IF POINT(XX+32,YX-78) =0 fall:noX=TRUE

1250 IF YX)130: IF roomX=4 MOVEXX, YX-68: SCOL0, 0; PRINTC HE\$236

1268 [F (recm2=5 OR recm2= 71 AND XX)64 AND XX(1898 XX =XX+MX:50101298

1278 MX=8

1298 IF room%=11 AND %%(18 88 %%=%%+16:#%=16:c%=1:faci ng%=2

1290 IF INKEY(-98) AND 11; 64 11=11-51; M1=-16: fector1= 1: step1=step1+1: IF step1=3 step1=1

1320 IF INKEY(-67) AND XI(
1838 IX=X1-SX:MX=16:facingX
=2:stepX=stepX+1:IF stepX=3
stepX=1

1310 IF room2=12 AND XX)=8 16 AND YX)=736 won2=TRUE:PR

Octage: ENDPROC 1320 IF MXCOB AND roomXCOS AND roomXCO7 AND rXCO1 SDU

ND1.1,7%/4.1 1330 IF XX)=1088 AND YX=12 8 AND qutuneX=TRUE AND roce X<>12 roceX=roceX+1:PROCini t:gotoneX=FALSE:PROCscreen: FMDPDGC

1340 IF INKEY(-1) jumping2 =TRUE:py2=Y2 1350 IF step2=2 AND facing

%=1 mole%=1 %=1 mole%=1

1360 IF step1=1 AND facing 1=1 mole1=2

1370 IF step%=2 AND facing %=2 mole%=4

1380 IF stepX=1 AND facing %=2 mole%=3 1390 IF jumping%=1RUE fall

inoX=FALSE:PROCjump
1400 IF fallinoX=TRUE jump

ingt=FALSE:PROCfall 1418 BCDL3,2:MOVEDXX,DY1:P

RINTmole#(omole%) 1420 MOVEXI,YZ:PRINTmole#(

moley)

1438 ENOPROC

1440 DEFPROCjump

1450 IF Y1>=oy1+96 OR POIN T(XX+32,YX+2)=1 OR YX)=816 highest1=IRUE: IF room1=8 VD U19.1.1.0.0.0

1460 IF highest%=FALSE Y%= YY+3?

1478 IF POINT(12+32,Y2-78) =1 highest%=TRUE

1480 IF POINT(XX+32,YX-70) =! jumpingX=FALSE:highestX= FALSE:IF roomX=8 YDU:9,1,8, 0,0.0

1498 IF highest%=TRUE Y2=Y 2-16

1500 SOUND1.1.Y%/4.1

1510 IF XX>64 AND XX<1008

1500 IF XX=1152 AND YX=128 rookX=ropeX+1:PROCscreen:P

1530 ENDPROC

154@ DEFPROCFall

1550 SOUND],1,72/4,1 1560 YZ=YZ-16

1578 IF PO!NT(XX+32,YX-78)

1580 ENGPROC

1598 DEFPRODCheck

1600 IF XX+32>=;x2 AND XX+ 32(=;xX+50 AND YX+64(=;yz-3 2 AND YX+9;Y2 ;pexel;X2=;xe=; xX+1:6COLJ,Z:MDVE;x2,jyX:PR INT;eexelf:gotonex=TRUE:VDUA :COLOURZ:PRINTIAB(2,3);56:4: PRINTIAB(18,28)* :TAB(18,2 PRINTIAB(18,28)* :TAB(18,2

91° ": VDU5 1610 if gotone%=TRUE MOVE1 160.60:600L0,d%:PRINTwords

1630 ENDPROC 1630 DEFPROCIPATIVE

1648 VDU19,3,6,8,8,8,8;PFINT TAS(12,1) "MANIC MOLE!"

1650 PRINT "Mavis mole, you r girlfriend, has been" "" ar ongly arrested for leaking documents" "to a paper. Help Nartin the manic mole" "collect il jewels for her bait."

1650 PRINT'" If you have the jewel,go through the"' "door on the right of the s creen and you"'"will come

out in another room."

1678 PRINT'"Z LEFT

"""X RIGHT"'"SHIFY

... JUMP"'"P PAUSE"

""R RESUME"

1688 PRINTTAB(15,29)*Press SPACE*:REPEATUNIILGET=32:C LS

Id90 PRINT ""SCREENS":COLD
URIPPINT" 1 = The Quest
begins" 2 = The Bottoole
ss Pit" 3 = The lapossib
le Screen?" 4 = The Melt
ing Girder" 5 = The Frid
pe Part !"

1700 PRINT 6 = The Snake"
"7 = The Fridge Part 2"
"8 = The Disappearing Screen" 9 = The Invisible 5 creen" 10 = The Trap" 11 = Conveyor Corner" 12 = The Prison"

1718 PRINTTAB(15,29) "Press SPACE": REPEATUNTILGET=32:C

1720 PRINT' "While the gam e is paused you can turn" "the sound on/off by pressing: ""S ON" ""O

1730 PRINT': SPC(8); "Enter skill level !-5"''The low er the skill level the slow er the "SPC(9)" time limit goes down.":REFEAT skill%-8 ET-48:UNTILskill%-0 AND skill%-1% (15%-15%) and skill%-6 skill%-7-skill%-

1748 ENDPROC 1758 DEFPROCIEVES

1760 IF lives%=0 ENDPROC 1770 PROCecreen:PROCINIT:E NDPAGE

1790 DEFPROCIOSt

1790 VDU19,3,6,8,8,8,8;PRINT TARK12,11"Bad Luck!"""You didn't free Mavis but yo; reached"""screen ";roon2;" ;*PROCtune2;PRINT" "SPC(5); ;"Fress 1-5 to olay again"; PROCskill level;ENDPROC

1880 DEFPROCHANGIQX=14:uX= 48:FSRP=4TD7:SDUND0,-15,P,3 :NEXT:JX=0:GCDL3,2

1910 MOVEGEN, GYZ: PRINTEGIE \$ (000) EX; RX=KX: RX=YX: CX=XX: RX = YX: EX=XX: FX=YX: GX=XX: RX = YX: EX=EXX: FX=YX: GX=XX: RX = YX: EX=EXX: CX=CX+qX: BX=DX+UX : EX=EXX: (QX=2): FX=FX+UX*22: \$ X=GX* (QX*2): HX=HX* (UX*2) \$ 1820 MOVEGX: BX: BCOLX: 2: VDU 244: NOVECX: DX: VDU247: MOVEEZ , FX: VDU246: MOVEGS: MX: VDU247 1830 MOVEGX: DX: VDU247: MOVEEZ 244: MOVECX: DX: VDU247: MOVEEZ 244: MOVEGX: DX: VDU247: MOVEEX 244: MOVEGX: DX: VDU247: MOVER 244: MOVEGX: DX: VDU247: MOVEGX: MX: VDU247: MOVER 244: MOVEGX: DX: VDU247: MOVEGX: MX: VDU247: MOVEGX: MX: VDU247: MOVEGX: MX: VDU247: MOVEGX: MX: VDU247: MX: VDU247 ,FX:VDU246:MOVEGX,HX:VDU245 :uX=uX-6:UNTILTX=24

1840 ENDPROC 1850 DEFPROCCAGE

1860 uZ=670:GCOL3.1:REPEAT :FORPX=920 TG 1880 STEP 22: PLGT69.PX.uX:NEXT:uX=uX+4:U NTILuX:=764

1878 MOVEP18,764: DRAWLBS8, 764: MOVEB96,768: VDU243: ENDF

1888 DEFPROCWON

1898 VDU19,3.6.0.0.e.e:PRINT TAB:112,1:"Well Bone!"""SFC (61"You have freed Mavis and le."""SFC(53"Press !-5 to play again":PROCSkill level :ENDPROC

1900 DEFPROCtune:RESTORE19

1918 REPEATREAD DX.PX:SDUN DX.-15.DX.PX:SDUNDI.0.8.8.U NTILDX=72 AND PX=3

.80,4,80,2,92,2,80,2 1930 DATA 80,2,72,2,100,0, 80,2,98,2,72,3

1940 ENDPROC

1958 DEFPROCEUMEZ: RESTORE 1980

:960 FORP=1 JO 39:READ D1. P1:SDUND1,-15,07.FX 1970 SDUND1,0.0.0:NEXT 1980 DATALOG,3.100,12.88.7

.92,7,108,7,108,12,68,3,92,
5,108,3,106,3,116,7,108,3,1
20,3,114,7,108,7,120,7,136,
16,120,3,120,7,116,3,128,7,
120,3,108,3,100,3,116,3,108,
3,92,3,88,15,92,3,100,3,12

.3,72.3,68.3.72.16 1990 ENDPROC

2000 DEFPROCEAUSE 2010 REPEAT

2020 IF INKEY(-82) /2=1 2030 IF INKEY(-171 /2=1

2848 IF vi=1 THEN *FX218.8 2858 IF vi=2 THEN *FX218.1

2050 UNTILGETS="R"

2070 ENDFROC

2000 DEFPROCSKILL level 2000 REPEATG=SET-48:UNTILG

2100 skill1=7-6

2310 EMBERGE 2120 REH DATA FOR SCREENS 2310 DATA64,800,1,3,3,6,8, 13,6,8,13,7,8,9,9,1,1,10,1, 4,18,11,8,18,1,16,18,16,11, 6,13,11,0,7,12,8,11,12,4,3, 13,8,7,13,1,12,13,2,2,14,8, 6,14,13,14,9,7,15,8,16,15,2,7,1 6,14,13,14,8,7,15,8,16,17,2,7,1

2348 0ATA5,19.8,3,24.8,12, 19.1,3,28.8,3,21,8,15,23,6, 7,20,8,8,22.6,5,24,8,9,25,2 .9,24,8,6,27,3,12,27,1,16,2 7,1,3,26,8,3,29,2,0,38,19,1

2.19.8.3.19.8.3.23.1

2170 DATAS,17,0.9,17.2,1.1
8.6,5,18,0,7,18.2,11.18,3,3
1.9,0.5,19.3,11.18,17,3,1,10.0
1.5,00.8,9,28.7,3,7,10.5,21,
8.51,21.8,15,28.1,11.27,0,5,21
1.23,21,24,3,5,24,0,7,24,8
1.23,21,24,3,5,24,0,7,24,8
1.12,24,3,5,24,0,7,24,8
5.8,1,28,0,5,28,0,7,28,21

2180 0ATA 11.26.8.15.26.8.5.27.8.7.27.8.9.27.8.11.27.0.15.27.8.9.27.8.11.27.0.15.27.7.3.2.6.3.2.6.3.2.6.21.28.0.15.27.3.2.6.3.2.6.3.2.6.21.28.0.15.28.0.21.28.0.15.28.0.21.28.0.15.28.0.21.28.0.15.28.0.21.28.0.21.28.0.27.21.28.0.27.21.28.25.21.28.25.21.28.25.0.10.27.15.27.25.21.28.25.0.10.27.0.16.27.15.2.29.21.28.25.0.10.27.0.16.27.15.2.29.21.28.25.0.10.27.0.16.27.15.2

2200 DATA 64,286,7,5,5,18,
5,12,10,15,15,12,4,11,12,0,5,
14,3,10,14,1,5,16,2,9,16,3,
5,18,2,9,19,2,5,20,1,8,20,
5,72,2,8,6,2,0,5,24,0,5,24,
0,7,24,1,1,26,0,5,26,2,2,26,0,5,24,1,1,30,3,16,30,2,14,12,14,15,2,14,16,2,14,15,2,14,16,2,14,15,2,14,16,2,

2210 BATA14,19,0,14,28,0,1

7.8.11.17.8.15.17.8.2.19.8.
6.19.0.10.19.8.14.19.8.3.21
.0.7.21.8.11.21.0.15.21.8.2
.23.0.6.23.0.18.23.0
2230 DATA 14.23.0.3.25.0.7

2230 DATA 14.23,8,3,25,0,7,25,0,11,25,0,15,25,8,2,27,8,6,27,8,18,27,8,14,27,0,9,29,8,14,29,1,16,30,2,16,27,1,13,30,8

2248 DATA192, 582, 7, 6, 2, 9, 1 ,15.8.1.1.10.0.5.10.1.12.18 .1,17,10.0,5,11,1,12,11,1,2 ,12,1,5,12,0,13,12,0,15,12, 1.5, 13.8.13.13.0.1.14.0.5.1 4.8.17.14.9.17.14.9.5.15.0. 13, 15, 0, 2, 16, 1, 5, 16, 0, 13, 15 .8,15,16,1,5,17,8,13,17,8 2750 DATA1.18,0,5,19,0.13, 13.0.17.18.8.5.19.2.15.19.2 .2.20,1.5,20,0,13,20,0,15,2 8,1,5,21,8,13,21,8,1,22,8,5 ,22.0,13,32.0,17,22.0,5,23, 0,13,23,0,2,24,1,5,24,8,13, 24.8, 15.24, 1.5, 25.8.13, 25.8 1,26.8.5.25.0.13.26.0.17.2 5.8.5.27.8.16.27.1

2250 DATA2,28.1,4,38,8,5,3 8,8,3,30,1,12,30,0,14,30,4, 1,38,0

2270 DATA 320,608.1,3,4.5.
8,2.8,1,5.9,2.10.7,1.7,18,8.
11,18.0,1,10.0,8.311.1,111.
1,0,15,12,1.2,1.2,1.1,114.8.1
0,15,1,33,15.0,1,36,37,15.
1,4,17.0.8.17.0,3,19.1,7,18.
1,7,17,8,9,19.0,1,20,1,7,2
8,0,7,20,05,21,0,7,21,

2280 DATA5,22.0,7,22,0.17.
22.0.5,23,2,13,23,2,2,24,0.
6,24,0.16,24,0,6,25,0,16,25,0,1,26,0,13,26,0,16,26,0,5



.27.1,15.27.1.2,28.8,9,28.8 .14.28,1,9,29,8,14,29,1,1,3 8.17.1.38.8

2300 047814, 15,2,1,16,0.1,
17,2,12,17,1,13,18,0,4,19,1
13,18,0,9,28,8,1,21,1,3,8,
23,1,12,23,8,14,24,23,2,4,4,4,8,
23,1,12,23,8,14,24,24,23,2
5,2,8,23,21,2,25,8,12,25,12,25,12,25,12,25,12,25,12,25,12,25,12,25,12,25,12,25,12,25,12

2318 847411,27,0,15,27,1.2 ,28,8,2,27,8,8,28,6,11,28,1 ,14,28,8,8,29,4,14,29,8,8,3 8,18,11,38,8

0328 647448,448,2,3,6,10, 8,4,11,8,5,11,8,2,15,1,4,15, 1,8,15,1,3,17,3,18,17,8,1 15,8,9,120,2,2,71,1,1,25,8,1 25,8,1,27,8,1,78,0,3,28,8, 7,29,8,5,26,8,9,26,8,7,38,1 17,38,9,15,38,8,17,38,1,13 11,8,15,11,8,14,15,8,17,14

2330 DATA14, [8.0.17, 20.0.1 5.21.0.14.24.0.13.25.0.3.25 .2,10,13,1,1,30,8

2358 0ATA15.26,8,17,25,8.6 .27,0,9,27,2,10,27,2,5,28,2 .9,29,1,3,29,1,6,29,6,8,29, 8,10,29,8,1,30,1,14,30,1,17 .30,1,1,30,0

2018 ptra-100, 100, 5.3, 5.4, 6.2, 7.2, 8.9, 6.9, 8.4, 9.0, 4.10, 0.7, 10.5, 12.0, 11.0, 5.12, 0.5, 11.0, 11.4, 1.1, 5.1, 11.0, 11.4, 1.1, 11.0,

2370 D4TA10,28,1,12,20,1,1 4,22,3,14,30,4,7,17,8,5,18, 4,4,19,1,7,19,2,9,19,14,2,2 1,7,20,0,9,20,1,4,21,5,4,2 24,1,5,25,0,4,24,1,5,25,0,5,26,1,8 25,1,6,27,2,11,14,1,1,30,0

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Lovel healide action. CAESAR Code
breaking broken. KEYBOARD.
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GENERATOR Complex characters,
made simple, RIGEL B Our of Hils
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your motive cards. NOTEBOOK
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work. SORT TIME The time they

DOWNER

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control. SPACE PODS More plants
reseases made simple. FRUIT
MACHINE Spart the wheates to win.
CHASER Avoid your opponent to
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moughts and crosses. ELECTRON
statement and savestatement and savestatement and savestatement and savestatement and savestatement and savestatement and save-

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ARRAPHANALLI SERVICIO DE LA CONTRACTOR D

Letters

selected from

Evelon

satisfied

Password is

Notebook Part 18

PASSWORD GENERATOR

RECENTLY, and much against my will as it means using a BBC Micro, the firm gave me a mailbox on Telecom Gold.

"What's your password going to be?" they asked. And my mind went blank.

It's not easy picking a password that can be remembered and that no one will guess. So I took my problem to my micro and the result was this Password Generator.

Mugtrop Nº 1

Null string will be

used to store letters

Picks a random

etter and uses

it to build the

Mugerno Nº 2

pags word

PROGRAM EXPLANATION.

- 10-30 REMs to tell you what the program is called, who wrote it and a line to switch off the flashing cursor.
 - 40 Sets up the string variable possibles. In this case I've just used it to store the upper case letters of the alphabet. You might want to set up your own range of letters to fool amateur cryptographers.
- -50,60 Ask you how long the password is to be and puts the result in number. The next line is a mugrap, making sure that you can't put in values that are less than one or go over 10 letters. If this happens the program goes back to the previous line.
- 70-180 Form the major REPEAT . . . UNTIL toop of the program. This goes round and round, producing a different password each time, until it's told that you're satisfied with the password.
 - 80 The string variable word\$, which is later to be used to store the letters of the password, is set to the null string at the beginning of the loop. Leave this line out and see what happens.
- .90-120 Make up a loop which cycles once for each letter of the password. Each time round the loop a letter is chosen and added to word\$.

 100 Ail this formidable line does is to pick a
 - random whole number lying between 1 and the length of possible\$ and store it in chance.

 110 The MIDS function uses chance to pick one letter out of possible\$.
- 110 The MID\$ function uses chance to pick one letter out of possible\$. It then adds this to the end of word\$. In this way word\$ is made up of a random selection of letters selected from possible\$.
- 130,140 Display the password generated and ask if you like it, prompting a single letter reply.

 150 Uses GET\$ to store the reply in result\$
 - 160 Another mugtrap. It uses INSTR to check whether results is one of the four letters YyNn. If not, the GOTO has the program
 - asking you again.

 180 By the time the program gets this far, resulfs must hold one of the letters YyNn. If it's N or n the loop goes round again, producing another password, otherwise it ends.
 - 190 Displays your chosen password.

18 REM Password denerato
18 REM Trevor Roberts
18 VEU 23,1,8;8;8;8;

- 48 possibles="ASCOCFGHIJ KLHNOPORSTUVWYY2" 58 INPUT "Number of Lett
- ers in word', number

 58 IF number 18 OR number

 (1 THEN PRINT "Twit": GOTO

 50 REFFRE
- 98 words="" TO numbe
- 100 chance=INT(RNO(LENipo ssible\$))) 110 word\$=word\$+MID\$(coss
- ibles.chance.1)

 128 NEXT cycle

 138 PRINT words

 140 PRINT 'Do you want th
 - is word? Y/N° 150 results=BETs 160 IF INSTRI"YVNn", resul ts)=0 PRINT "Twil":60T0 143 170 CLS
- 198 UNTIL INSTRUTY PESU 118 PRINT PV
- 198 PRINT "Your password is "words

Trever Roberts

LIFE's not easy for Derek. He was quite happily sail-ing along on the SS Database when he was attacked by Captain Pinkbeard, of the pirate ship Redwood.

Derek's crew were taken prisoner and all his treasure became the pirate's booty.

That night Ceptain Pinkbeard and his buccaneers got drunk to celebrate their victory. And for entertainment they decided to test out Derek's mathematical abilities.

They'd ask him some questions and, if he got them right, his ship, crew and treasure would be returned.

But if he got five or more wrong he'd have to walk the plank and feed the sharks.

This is where you, as Derek, come on the scene. Get the answers wrong and he'll go for a sharky swim. But answer them correctly and he could live to be 80! Jason Cann



Pirate Maths listing

18REM	141	*********

ZBREN		
1		
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	348MOVE392,480
	35@PLOTB1,0,480
	368MOVE438,488
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	388PLOT81,388,-488
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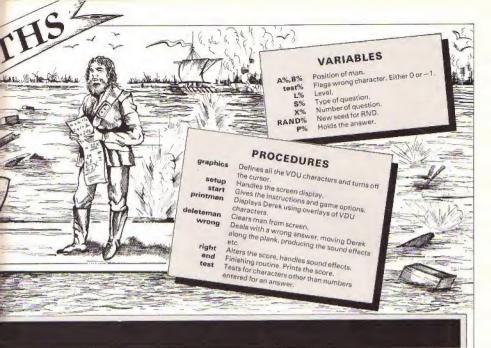
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7.3.1.8 146.146.124.16 47 er all* 728VDU23,228,8,126,252,24 860VDU23,242,8,16,48,48,1 1828NOVEAX.BX: GCOLB.3: VDU2 1230PRINT the questions. E 8,224,248,248,36 6.16.16.16 ach" 739VDU23,229,48,124,127,6 870VDU23,243,8,112,129,11 1248PRINT' time he doesn't 1838MOVEAL, BI+33: VDU243 3,63,31,31,15 2,32,0,32,32 1848MOVEAX . 8X+33: 6COL8 . 1: V 749VDU23,238,8,8,8,128,19 889VDU23.244.32.32.8.8.8. 125@PRINT' the correct ans 2,96,176,88 1858IFV=1MOVEAX.BX:6COL0.2 8.8.48 758VDU23,231,15,7,7,3,127 126@PRINT "he will have to 89070023,245,0,0,0,0,0,11 : VDU249: GCOLB.3: MOVEAX.BX: V .127.62.31 2,112,112 DU250: FORM=1T0100: NEXT walk" 768VDE23,232,248,252,252. 1278PRINT one step nearer 988VDU23,246,112,112,8,8, LRARVOU4 254,198,118,223,191 1878ENDPROC to* 8.8.8.8 129@PRINT "the end of the 918VDU23.247.8.8.32.32.32 1888+++++++++++ 77840023,233,8,8,8,6,64,8,3 32,32.0 1898DEFPROCdeleteman nlank" 2,8,16 1298PRINT and the hungry s 928VDU23,248,112,96,96,64 11 BOUDHS 780VDU23,234,8,8,8,84,8,8 1118MDVEAX.BX:SCOL@.@:VDU2 harts 8.9. 8,0,8,0, 93870023,249,8,8,8,8,8,8,8 26 1388PRINT"in the water." 790VDU23,235,8,8,8,8,8,8,12 ,0,8 1120MDVEAX, BX+33: VDU226 1310COLOUR1: PRINT "" 8.64.32 1138VD84 JASON CANN' 948VDU23,250,2,2,2,0,0,0, 888VDU23,236,255,129,129, 1148ENDPROC 1328COLOUR3 129, 129, 129, 129, 255 8.8 1158*********** 1338PRINTTAB(8.28) "WHAT LE 818VDU23,237,8,8,24,36,36 958VDU23,251,16,16,8,254, 254.0.16.16 11ABDEEPROCEtart VEL (1-5) ?" .24.8.8 **96BENDPROC** 1348PRINTTAB(8,38)* 1=EAS 1178VDU19.3.3:8: 828VDU23, 238, 126, 182, 98, 9 978++++++++++++++ 1180PROCcurs Y . 5=HARD* 8,182,126,8,8 998DEFPROCorintean 1190COLOURI 1358VDU7 83840023,239,8,8,8,8,255, 99@VDU5 1286PRINT'* PIRATE MATH 1369+FX21.B 129,255,129 1888MOVEAX, BX: SCOLB, 4: VDU2 1378LX=6ET 84890023,248,255,255,255,

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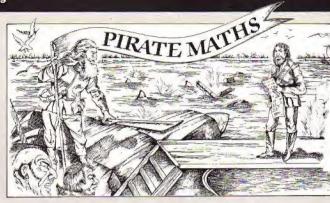
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858VDU23,241,16,16,16,16,

1219COLOUR2

1228PRINT" "Help Fred answ

From Page 43 13881FLX(490RLZ)53THEN1378 1398L1=L1-48 1488CLS: PRINT'SPC (6) "LEVEL ": LX: FORNX=1TO4: COLOUR1: RE ADA#: PRINTTAB(0, NX+6): "(": N 1: ") ": COLOUR2: PRINTTAB (4. NZ #6): A\$2 NEXT 14199007 1428+FX21.8 14385%=SET: IFS%(490RS%)52T HEN143B 1448SZ=SZ-48 1458DATAMULTIPLYING TEST.D IVISION TEST, ADDING TEST, SU BTRACTING TEST 146BENDPROC 1478*********** 1489FORXX=1T018 149BRANDX=RND(-TIME) 1588N1%=INT (RND (LX+6)): N2% -THE CONTACT TEALS 1518: CLS: PRINT' WHAT IS' 1528PRINT: PRINT; N1%; " x "; NZX;" = "; 1538+FX21.8 1540INPUTTAB(18.2) X\$ 155@PROCtest 1568IFtest%=1THEN1510 15790%=VALX#1P%=N1%#N2%: [F OX=PXPROCrioht ELSEPROCWOON q:PRINT" W R O N 6 "'':PRI NT; N1%; " x "; N2%; " = "; P 1580*FX21.€ 1598WATT=INKEY(300) 1ABONE IT 1618RETURN 1628*********** 163@FORXX=1T01@ 164BRANDX=RND(-TIME) 1650N12=INT(RND(4.4+L2)):N 2%=INT(RND(4.4+L%)) 1660PI=NII*NZI 1678:CLS:PRINT" WHAT IS" 14BOPRINT:PRINT;PZ; * ";CH R\$(251);" ":N2X;" = "; 1690+FX21.@ 1788INPUTTAB(18,2)X\$ 1718PROCEEST 1728IFtest%=1THEN1678 17380%=VALX\$: 1FO%=N1%PROCF ight ELSEPROCWrong: PRINT" WRONG "' PRINT PT;" ;CHR\$(251); ";N21;" = ";



": N2%: " = ":PX"

1748+FX21.8 1758WAIT= INKEY (300) 1749NETT 1770RETURN 1788********** 1798FORXX=17018 IRRARANDT=RND(-TIME) 1818N1X=INT(RND(LX+6)+LX): N21=INT(RND(L1+6)+L1) 1828P%=N12+N2% 1838: CLS: PRINT' WHAT IS" 1848PRINT: PRINT: N17: " + ": N2%:" = "1 1850*FX21.0 1860INPUTTAB(18.2) X\$ 1979PROCtest 18801Ftest = 1 THEN 1838 189801=VALIS: IFO1=P1PROCri ant ELSEPROCWrong: PRINT" W R Q N S "" PRINTINIZI" + ": N2%:" = ": P%" 1900*FX21.0 1918WAIT=INKEY (388) 1929NEYT 1938RETURN 1940********** 1950FORYY=1T010 1960RANDX=RND(-TIME) 1978N12=INT(RND((15)+L2)); N2Z=INT(RND(N1Z)) 1988P%=N1%-N2% 1998: CLS: PRINT" WHAT IS" 2000PRINT: PRINT: N12: " -": N2%:" = ": 2010*FX21.0 2828INPUTTAB(18.2) X\$ 2939PROCtest 2040IFtest%=1THEN1990 28580X=VALX\$: IFOX=PXPROCri ght ELSEPROCHrong:PRINT' W

R D N 6 "": PRINT: NIX: " -

2068+FX21.8 2070WAIT=INKEY (300) DOGGNEYT 2090RETURN 2100+++++++++++ 2110DEFPROCHE DAG 2128V=1:PROCprintean 21302ROCdeleteman 2148AI=AI+44: V=8 2150PROCorintman 21681FAX)=1832THEN2328 2170FORVX=180T00STEP-5 218890UND1,-15,VX,1 2190NEXT 2200ENDPROC 2218**************** ********** 2220DEFPROCright 2238PRINT' R I G H T *** 2248F0RVZ=58T01285TEP18 2250SOUND1, ~15, VX, 1 2260SOUND1,-15,VX-10,1 2278SOUND1, -15, VY-28, 1 2280NEXT 2298FX=FX+1 2388ENDPROC 2310*********** 2328ENVELOPE1.129.-1.-1.-1 ,78,68,88,126,8,8,-126,126, 126 233890UND1,1,238,40 234@FORM=1706 235MPROCdeleteman 2368B1=B1-28 2378*FX19 2380PROCorintman

239BNEXT

2400PROCdeleteman

2410SDUND0, -15.5.20

2420FORN=1T01000: NEXT

243BRETURN 2442+********** 2450DEFPROCend 2460PRINT * VALL HAUE S CORED"":" ":F2#18: "Z ON LEVEL ": LX 2470F0RM=1T04:F0RCX=150T02 BOSTEP18: SOUND1,-15,CX,[:NE XT: FORCX=200TO:50STEP-10:SO UND1. -15.CX.1: NEXT. 2488+FX21.8 2490WAIT=BET 2500ENOPROC 2510*********** 2520DEFPROCcurs 2538VDU23,1,8:0:0:0:0: 2548*F19 1 2558*FX10 1 2568+FX4.2 2578+FX225 2588#FY22A 2598*FX227 268881=8 2610ENDPROC 2620+*********** 2630DEFPROCLest 264910001=8 2650REPEAT 266@10001=10001+1 26701FASC (MID\$ (X\$. 1000%.1)) (480R ASC(MID\$(X\$, 1000X, 1))>57THEN test%=1:ENDPROC 268@UNTILI pop X=LEN(X\$) 249@tast 2=8 27RRENDPROC 2718***********

This listing is included in this month's cassette tape offer. See order form on Page 61.

NIX"

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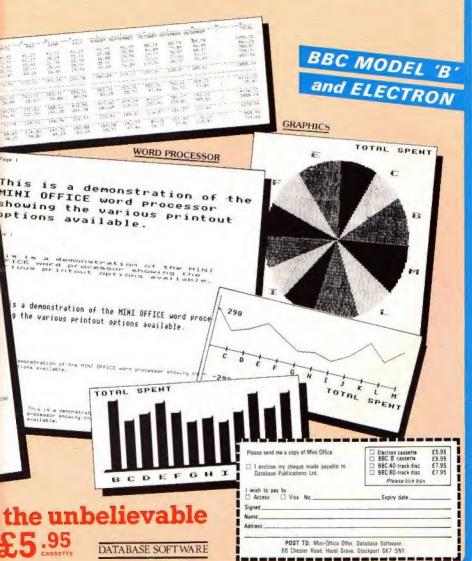
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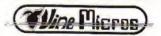
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ADDCOMM is now well established with BBC 'B' owners and the same chip is used with a ROM board to increase the Electron's BASIC language by forty new commands.

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ADDCOMM is available from Vine Micros, Marshborough, Nr. Sandwich, Kent, CT13 OPG. The price of £28.00 includes V.A.T. and first class post, or, if you would like more details, send a stamp for the sixteen page brochure which includes recent reviews.

Micro Messages

IT was with interest and dismay that I read Mike Cowley's article on "Where has all the educational software gone?" in the May Electron User.

I am a teacher in Leeds, where one of my responsibilities is the development of educational techniques through the use of computer techniques.

In doing this job I also have come across comments similar to those expressed by parents in the article.

Naturally I have also come across many types of educational software. It was from this angle that my interest in the article was aroused. My dismay came from what I read.

One of the parents quoted likened buying a computer for educational purposes to buying a car to find later that there was no pelrol available.

Having all too frequently been asked by parents to advise them on appropriate hardware to aid their children's educational development, I am astounded by their willingness to part with

Where educational software is failing

money! Their approach goes against every reasonable consumer practice.

Would you buy a car if petrol was not available?

Surely if you are interested in the educational development of your child and you have this order of money to spend, your lirst approach should be to find out the most effective way of providing this development.

I am forced to wonder how many parents consulted sublect teachers.

How can you remedy something when you are neither sure what it is that you are remedying nor are you sure how the remedying should be done?

It is a recurrent theme throughout the May article. The average lay person has a very vague understanding of the nature of education. It is a

false assumption that computers per se are going to provide this.

II, however, a parent feels that a computer is the best solution, them my advice is - Find the software first, then buy the machine which runs it.

This will also have the longiterm knock-on effect of encouraging dealers to improve their educational software supplies.

To do your buying the other way round is like buying a sewing machine when what you really need is clothes.

My second point of dismay, and perhaps more profound, is the lack of discussion in the article as to just what constitutes educational software.

This I realise is a thorny problem, but there are some points which must be made.

What software houses often deem as educational

software are nothing more than drill and practice routines.

At best these may provide some small but very limited service to the user. At worst they can confuse and sometimes hinder progress by using strange vocabulary or methods.

Perhaps the worst crime in this area is the use of language in instructions or guidance which is beyond the reading age of the target audience.

There is little point in producing a good, imaginative program on basic number bonding, when the successful child is rewarded by words like "Excellent".

Such words are unreadable by a child who would find such a program of value.

in any case most of such software is aimed at primary-school-aged children, and yet it seems that most children acquire their computers around 10-13. Good software at this level is indeed very scarce.

Why is good software scarce? The basic problem is, as was mentioned in the May article, a lack of potential volume sales.

This is further aggravated when one starts to consider the nature of good educational software.

In the main this must be related to work that is already going on in school – it must play a supportive role.

As courses are different in nature from one school to the next, it is of little wonder that the prospect of volume sales is remote.

Further, how many parents have enough detailed knowledge of what their child is doing in school in order that they may make sound software purchases?

There is another problem, too. In many cases, so-called



PLEASE could you help me with Roland Waddilove's program Skramble in the May issue of Electron User?

I have typed it all out, but when I run it, the instructions come on.

It then says press Space, so I did and a list of options came on. Number five was to start, but when I pressed it the instructions just came back on. Is there anything I could

do? - Paul A. Howson, Rochdale.

• There is probably a simple typing error somewhere in your listing. This is being picked up by the ON ERROR in line 40, causing the program to run again. Simply delete line 40 and run the program again to see which line it's in.

Several readers have had

problems with this game. Are long machine code arcade games just too difficult to enter and de-bug? Would you prefer a shorter, simpler listings? Let us know.

I HAVE come to my wits' end with Skramble, in your May edition. Three people have checked my listings and can find nothing wrong.

I have removed line 40 on Error Run and the trouble starts at line 990. It says there is a syntax error at this line.

Can you tell me what to do next? – L. Fendyke, Boston, Lincs.

 Unfortunately Skramble didn't reproduce too well and some copies were difficult to seems to have been particularly faint on these two lines, use it to join the two words together.

COULD you please answer a query on the listing for Skramble in the May issue?

Line 3300 has the symbol | printed. I am only a learner on the Electron and can't find this symbol on the keyboard except on the copy key.

Can you help as this symbol appears on other lines in the listing? - Harry Simnis, Atherton, Manchester.

 The square brackets on the copy key indicate the beginning and end of an assembly language listing. educational software has been written by non-education-

While not wishing to sound elitist, I am often insuited by the suggestion that this kind of software in some way reflects what is going on in school.

No, the best software I have seen to date has either been produced by teachers or by those who have very close links with the educational service.

But by its very nature this software is not suitable for the general market. It invariably needs to be used by someone with detailed knowledge in the area, or it is so specific in nature that it would only be of value to any one child for about five minutes.

In a school, this is often an advantage, whereas it is a positive disadvantage to any purchasing parent.

In short, by the very nature of what is good in educational software it excludes itself from the shelf of the typical software shop.

There is, however, same and news.

Perhaps one of the most important educational facilities provided by the home micro is the word processor.

While on the face of it not an obvious piece of educational software, it is the one which will have the largest educational impact.

Most schoolwork demands writing in one form or another. In using a ward processor to do this I have seen some staggering developments in children of all ages and academic ability.

It is not the purpose of this letter to expound the virtues of word processing, but for the parent who is looking for some readily-available good educational software, you could do a lot worse than this. – Alan Smith, Leeds.

Is this a record?

i PURCHASED an Acorn data recorder – featured in February's Electron User – only to find within ten days that the lid to the cassette port would not open.

The recorder was replaced without question by a leading High Street retailer.

The second recorder lasted six weeks, when it was found we could not record or cue forward. It has since been returned under guarantee.

Both recorders were treated with the respect they deserved and should not have malfunctioned in such a short space of time.

Have any other users of this peripheral experienced difliculty, or were both recorders of the freceived the rogues of the batch? – J. Gilbert, Bedford.

 This is the first we have heard. Maybe you have just been unlucky.

Just the program . . .

I AM a teacher and spend much of my spare time trying to "improve" educational programs — by adding colour, extra text, loops, etc.

I also attempt small "progs" of my own but am hampered by my lack of expertise in programming.

I've tried books but I guess !

am just thick. They seem to start way above me.

Today I discovered your Intro to Programming by Pete Bibby and it seems that it would be just the help I need.

Unfortunately I've missed most of it because being on BBCs I don't usually buy a mag to do with Electrons.

Is it possible for me to get reprints of the article? Obviously getting the back copies would solve the problem but i really can't afford £14 - 14 copies at £1, assuming one article per month.

Any constructive suggestions would be appreciated. -Anthony Staniland, Sheffield.

 You should find Mike Bibby's book Getting Started In BBC Basic just what you're looking for.

Lurking in line 80

IN the March issue of Electron User, I found the "Fill it up — Fast" program and typed it in.

Problem — Running the program gives me a "Bad Command at line 80". The line is correct — I've checked it, re-typed it, etc.

If I delete the line, I get the listing and then, on top of the listing, is superimposed the graphics being filled in.

What do I do? What am I doing wrong? What is the function of line 80? The User Guide is of no help here. -

Paul Allard, Leicester.

● The *FX command in line 80 switches off the Plus I if it is attached. If not then a bad command is reported. If you haven't got a Plus 1 then delete line 80 – sorry, we should have spotted this.

Joy from Joyplus

I WOULD like to congratulate you on your superb Joyplus utility in the April issue. Apart from Micro Power games, it also works with the following games, using memory location 110 and Negative Inkey!

Mr Wiz (Superior), Percy Penguin (Superior), Alien Dropout (Superior), Tempest (Superior), Bugblaster (Alligata), Cylon Attack (A&F), Hunchback (Ocean).

Here are some of my high scores, using my joystick: Tempest 79,120, Positron 1,103,220, Cylon Attack 56,000, Mr Wiz 29,050. – Matthew O'Donnell, Reading.

The bracket bandit strikes again

WHAT'S happening to the Electron User offices? No sooner had I read about the missing bracket in Super Archer (June Micro Messages) than I find another missing bracket.

Unless you're making use of some particularly arcane property of Basic, shouldn't line 280 of May's Spring Flowers program tead:

298DEFPROCelant(XX,YX,IX)
and not:

290DEFPROCP) ant (XX, YX, IX as you had it? - Tim Brown, Hartlepool.

You're perfectly right, Tim, it's yet another case of the missing bracket. The program the listing was printed from was fine. All we can do is apologise to the author, Roger Frost, and try to find out who's collecting the final brackets. Has anyone out there any theories?

. . . and again

RE Spring Flowers in your May issue. My program crashed at line 370 and on examination I find that due to a misprint part of line 370 and also line 280 are missing. Can you help? —

A. Peckham, Brightlingsea, Essex.

 The bracket at the end of line 280 seems to have disappeared, but line 370 is OK, but not very clear in some copies. Here they are again...

288 DEFPROCPLANTIXY, YX, ZZ

370 MOVE0,YX-10:MOVE-XX/2 ,XX/4+YX-10:PLOTB5,-XX+.8,X X+YX

Mini Office on disc

I HAVE recently purchased an Electron Plus 3 disc drive so so to have quicker access to database programs that I have on cassette at present – these are based on your superb Mini Office tape.

Question - Can these be transferred to Plus 3 discs? and if so how do I do that? If it is not possible, is there a Mini Office disc for the Plus 3 (3½ in single-sided)? I thoroughly enjoy Electron

User and, hopefully, am looking forward to articles and information on the Plus 3 in future issues. – N. Gill, Camberley, Surrey.

 The Mini Office team are currently transferring the programs to Plus 3 disc format.

Software selection

I HAVE had my Electron for nearly a year, I am very satisfied with it and the expansions available. However, I have one complaint software

I am always hearing about new games for the BBC. CBM64, Spectrum, and even the Amstrad has now got

How about Manic Miner. for example? It is out for every good home computer apart from the Electron.

Also, there are many other games that not just me but everyone else would like to see. So please more and more software! - J. Fulbrook. Burnham, Bucks,

Unfair to the Scots

LAST year I went to Manchester for an Electron show. It's all very well having shows down in England, but I spent most of the time on the train. What's wrong with having one up here in Edinburgh? Come on, show a little consideration for us Scots. - Jane Robertson. Edinburgh.

PS. By the way, my score for Chuckie-Egg is: 2,800,000, Level 149. Beat that!

Ruled offside

WILL there be football games like Match Day Ifor the Spectrum) and International Soccer (for the CBM64) on the Acorn Electron?

All the other football games are management simulation. but on these two games you can control the players and dribble, shoot, pass etc.

Match Day is coming out for the BBC B and CBM64. Why can't it come out for the Acorn Electron? Is it that the Electron hasn't got enough memory? - Michael Tang, Epping, Essex.

· The lack of memory when

WHAT would you like to see in future issues of Flectron User?

What tips have you help other readers?

Now's here is your opportunity to share your experiences.

Remember that these are the pages that you

tear vourself away from your Electron keyboard and drop us a line. And please, if you want a reply, enclose an SAE. The address is:

Micro Messages Electron User Eurona House 68 Chester Road Hazel Grove Stockport SK7 5NY.

thing yet that I have got out of your magazine,

The only change I would like to make to the programs is to expand the bit image section to produce in hard copy form the different colours which may be sent to the screen, as is achieved in the graphics section of Mini Office.

My own attempts have so far failed. How about a little help, Roland? - C.J. Stump, London S.W.1

 It's something we've had in mind for quite a while. The trouble is trying to find the time to work on it. Can anyone supply a suitable listing? -

Bring back the Kid

WE have just bought all the back issues of Electron User and want to tell you how much we have enjoyed them, and how great they are.

We appreciate a magazine in which all the programs are specifically written for the

We prefer the harder games and would like more 3-D graphic programs like Star Fighter (Vol. 2, No. 2, Nov. 1984).

The idea of printing readers' corrections to programs is a good one, but we would like the program print made easier to read (eg Y & V. 1 & L).

The information on soft and hardware for the Electron is

We would like more space to be given to Sounds Exciting. However we miss the Micro Kid from the front of the magazine. - Neil & Michael Comerie. Dunfermline

· Brackets excepted, we do try our best with listings and are always trying to improve them. Does anyone else miss the kirl?

Copyright harrier

I HAVE bought several magazines for the Electron and vours is the hest around It's great.

Could you please recommend a good shoot-'em-up for the Electron? And could we have a few articles on how to get into commercial programs? - Jason Scholfield, Aylesbury, Bucks.

· Zalaga should meet your requirements for a good shoot-'em-up. We can't explain how to break into commercial software as they are copyright.

Sim snag

I RECENTLY bought the game Sim and am finding it extremely difficult to get past the channel 4 signs on the screen where it says 'Wot no advarts'

is there anybody who can help me and give me tips on how to play?

And is it possible to print a fairly short games program, because I hate typing in lang programs? - Graeme Padgham, Tonbridge, Kent.

· Can our readers help? We try to include a wide range of programs - short, long, simple and complicated. There should be something for everyone.

picked up that could

write vourselves. So

using graphics, even in Mode 5, is always a problem. It's unlikely that a good simulation will be produced.

Mystery address

CAN you solve a problem for us? We have a Vulcan lovstick interface and when playing the game of Gauntlet the computer asks for the address of the joystick. We do not understand what it means.

Our computer is an Acorn Electron - M.P. Park, Liskeard, Cornwall.

· This is for owners of the First Byte joystick interface. A conversion program must be loaded before the main game.

Let there be light

UPON seeing a demonstration of a light pen at school, I decided to purchase one.

After searching through all the computer shops I could think of I was unable to find one - and am writing to Micro Messages to ask if anyone else has heard or seen of a light pen for the Electron. - A.R. Bill. Nottingham.

 We haven't heard of a light pen available for the Electron

Enhanced screen dump

ROLAND Waddilove's screen dump programs published in your March issue are the best

DISC POWER

AT A NEW LOW PRICE!

NOW it's cheaper than ever to add the power of discs to your Electron Plus 1 – with the Cumana floppy disc system.

Easy to fit and simple to use, the Cumana system has the latest and most flexible DFS for the Electron – and much more besides.

It consists of an interface, electronics and software in a cartridge, a single 5¼ in disc drive with lead and a utilities disc.

The interface slots into the Plus 1's cartridge port. Up to two 3½ in or 5¼ in disc drives can be attached. The result is a whole new dimension of speed and reliability!

Its advanced features include:

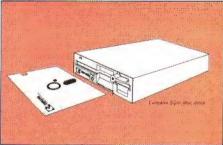
- Fast, reliable storage of programs, word processor files and databases.
- Double density format to maximise use of the discs.
- A complete set of commands for efficient disc management.
- Easy transfer from tape to disc. The DFS uses no precious RAM.
- Random access files for more advanced data storage.

- The ability to read programs from both BBC Micro single density discs and from the Plus 3 ADFS discs.
- A utilities disc packed full of useful programs, including a verify routine, formatters, copy and backup routines and a powerful disc editor.
- A thorough, straightforward manual.

When you add to this the fact that the cartridge has a built in real time clock and a ROM socket (for additional software on a chip) then you'll realise why the Cumana floppy disc system has been so warmly welcomed by Electron users.



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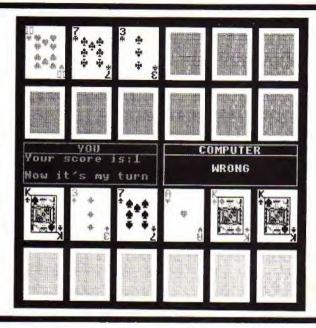
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Will it be Higher or Lower?



IN Higher or Lower you play the Electron at cards. Reminiscent of the popular television card game, it's easy to learn, simple to play - but hard to win.

There are three main parts to the program. The first deals with the instructions. These are displayed before each game, explaining the rules, how the controls work and also giving a choice of having

PROCYOU

PROCcard

the sound on or off.

Next comes the game proper. Twenty four cards are drawn on screen, half with red backs and half with yellow.

Also two text windows are set up, the red one dealing with the red cards and, logically, the yellow with the vellow cards.

A card is turned over and the player is asked if he wants to change it. If he does he

presses Y, If not he presses N.

Then the micro asks if the player thinks the next card will be higher or lower in value. He presses H or L in reply.

If the player is right then a tune is played and the process repeated until an error is made.

Once this happens (beware. the same value card is counted as wrong) the player is told his score and the Electron takes its turn.

The micro does exactly the same as the player, but uses the yellow backed cards. When it makes an error the game is over and the program goes onto the third and final stage, the results.

Here the scores of player and micro are compared and the winner (if any) is duly congratulated with a tune and message. There is then the option of finishing or having another oo.

PROCEDURES

Compares scores and prints **PROCeompare** according merits.

Draws a court card at position x%, PROCcourt

Draws screen with card backs and **PROCsetup**

windows. Controls player's turn.

Determines the Electron's turn. Set up and draws the non-court PROCcomputer PROCone to cards at x%. v%. Gives instructions, sets up variables PROCten **PROCINS**

and sound option. Chooses random card and suit. Decides position on screen for next

VARIABLES

A\$ Yes/no replies.

ns% Finds out when new cards are required. User's score.

C% Computer's score. loop% Time delay,

so%,son% Sound delay.

jqk% VDU 23 numbers for court cards. suit% RND(4) gives suit of card.

r% RND(13) picks number of card. x%,y% Coordinates of card.

v% Value of last card.

ans\$ Carries high/low decision. ch% Allows user to change first card.

chc% Computer change first card.



JOREN HIGHER OR LOWER 20REM BY IAN COOPER 300N ERROR GOTO 2600 4BMODE1 58*FX4.1 68VDU23:8202:0:0:0: 70CLEAR: VDU26: CLS: ENVELO PE4, 2, 18, -18, 18, 5, 5, 5, 126, 8

.0,-126,126,126 80ns1=0:U1=-1:C1=-1:ch1=

1:chc%=1

90PRDCins 100PROCsetup

110PROCVOU 128PROCcomputer 13@PROCcompare

14060T070 150END

168DEFPROCCOMpare 178*FX15.1

180ENVELOPE3,5,5,-5,5,8,8 ,8,126,8,8,-126,126,126

1901FUXCCX THENGOTO370 EL SEIFUX>CXTHENGGT0278

200VDU28,2,17,18,15:CLS:P RINT" ': COLOUR2: PRINT' DRAW!"

210VDU28, 28, 17, 36, 15: COLO UR1: PRINT" ANOTHER GAME?": PRINT* (Y/N) P

228A\$=GET\$: IFA\$()"Y" ANDA \$<>"N"THENGOTO268

2301FA#="N"THEN240 ELSEEN

240VDU26: COLOUR128: COLOUR

3: CLS: END 250ENDPROC

260V9U7:60T0210 270VDU28,2,17,18,15:CLS:P RINT" ": COLOUR2: PRINT"

YOU WON" 280VDU28, 28, 17, 36, 15: CLS

298SDUND1,501,65,68 300FOR! 000%=0T03000: NEXT1

319VDU28,28,17,36,15:CLS: COLOURI: PRINT' ANOTHER BAN E?":PRINT" (Y/N) " 328A\$=GET\$: IFA\$<>"Y" ANDA

\$CONTHENGUIDAD 3381FAS="N"THEN348 ELSEEN

DPROC 340VDU26: COLOUR128: COLOUR

3: CLS: END 350ENDPROC

3600007:6070310 370VDU28,20,17,36,15:CLS: PRINT" ": COLDUR1: PRINT"

I MON" 388V0U28, 2, 17, 18, 15; CLS 390SCUND1, sol, 65,60

488FOR1 oop7=8703880: NEXT1 418VDU28, 2, 17, 18, 15: CLS: C

OLOUR2: PRINT* ANOTHER SAME ?": PRINT" (Y/N) *

428AS=GETS: (FASC)"Y" ANDA \$<>*N*THENBOTO468

4381FAS="N"THEN448 ELSEEN

440VDU26: COLOUR! 28: COLOUR J: CLS: END

450ENDPROC

468VDU7: GOTO418 470DEFPROCCOURT 480RESTORE2340

49@FORjok%=23@TO241 500READIX, JI, KI, LI, MI, NI,

510VDU23.jokZ.II.JT.KI.LI

MY, MY, DY, PY 520NEXT jokx

538MOVE31,31:6COL0,8:0RAW 31.164: DRAW132.164: DRAW132. 31: DRAW31, 31: VDU24, 32; 64; 12

8; 129; : GCOLB, 138: CL6

Higher or Lower listing

From Page 55

548MDVE34,126:VDU238,234, 238,8,18,248,8,0,236,8,8,23 2,8,11,18,8,1,231,235,239,8 ,18,241,8,8,237,8,8,233

SS01Fr%=11THENRESTORE2440 ELSEIFr%=12THENRESTORE2410

ELSERESTORE2398 56BFORjqkX=242T0251 57BREADIX,JX,KX,LX,MX,MX,

01,P1 588VDU23,jqk2,I2,J1,K1,L1

MI,NI,OI,PI SPONEITIONI

608/00124, 32; 32; 128; 168; 18 0VE66, 156; VDU242, 249; 8, 8, 18, 8, 243, 248, 9, 8, 18, 8, 22, 244 61080VE32, 68; VDU38, 9, 1, 25 1, 245, 8, 8, 18, 8, 8, 258, 247, 8, 18, 9, 2, 246

6201FsuitX(3THENGCOL0,0 E LSEGCOL0,1

630MOVE31,168:VDUq2:MOVE9 6.61:VDU(ax-27)

648ENDPROC 658DEFPROCsetup

460V0U23,255,54,127,127,1 27,62,28,8,8,23,252,8,28,28 ,107,127,107,8,28,23,253,8, 28,62,127,62,28,8,8

678V0U23,234,6,28,62,127,
127,127,28,62,23,225,28,8,1
87,127,187,28,28,8,23,226,8,8,23,227,127,62,28,8,23,227
62,28,127,127,127,127,62,28,8,23,227

,62,28,127,127,127,62,28,8 698VDU23,228,8,8,28,62,12 7,127,127,54 698FDRVX=824T0680STEP-224

700FORX1=64T011525TEP192 710 V0U29,x2;yX;*VDU24,8; 8;168;192;:6C0L0,131:CL6:V0 U24,20;20;140;172;:6C0L0,12 9:CL6

720NEXTKI 730NEXTVI

748FORyX=224TO8STEP-224 758FORxX=64TD1152STEP192

7&8VDU29,xx;yX;:VDU24,8;8 ;i&8;192;:6COL8,131:CL6:VDU 24,28;28;148;172;:6COL8,138 :CL5

77BNEXTXX 78BNEXTXX

798CCL8,1: VDU26,29,68;43 2;5: MOVEE, 0: DRAM548,0: DRAM5 48,152: DRAM0,152: DRAM0,0: MO VEB,112: DRAM544,112: MOVE223 ,146: PRINT "YOU" 8086CDL0,2:VDU29,636;432; 5:MOVE6,8:DRAM548,8:DRAM548 ,152:DRAM8,152:DRAM8,8:MDVE 8,112:DRAM548,112:MOVE144,1 46:PRINT*CGMPUTER*:VDU4

46:PRINT"COMPUTER": VDU4 818FOR1gopX=8T0588: NEXT1s opX

OP 2 82BENDPROC

8380EFPROCyou 848nsX=8:xX=64:yX=824:PRO

Coard

850v%=rx:UX=UX+1:IFUX=11T HENGOTOLI18

86860T0888

888VDU28,2,17,18,15:COLOU RI:CLS:IFchX=@THENGOTO940

998#FX15,1 988PRINT" DO YOU WANT A" :PRINT" DIFFERENT CARD!":PR INT" (Press Y or N)?";

918A\$=GET\$: IFA\$<>*Y* ANDA \$<>*N* THENGOTO988

928IFA*="N"THENGOTO948 938ch%=8:x%=64:y%=824:PRO Ccard:y%=r%

948chT=8:CLS:PRINT* HIGHE R or LOWER*

958PRINT* (Press H or L)?

960=FX15,1 978=ns\$=BET\$:IFans\$()"H" ANDans\$()"L"THENGOTO870

988xX=xX+192: IFxX>1168THE

9981Fx1>1168THENx1=64

101BIFvZ(rI ANDans*="H"THE NGOTD102B ELSEIFvX)rX ANDan s*="L"THENGOTD1028 ELSEGOTD

1820VDU28,2,17,18,15:CLS:C OLDUR1:PRINT' ":PRINT" CORRECT"

183850UND1,so%,97,18:SOUND 1,so%,185,18:SOUND1,so%,89, 18:SOUND1,so%,41,18:SOUND1, so%,69,28

1040FOR1cop%=0T02050:NEXT1 cop%:SCT0050 1050VDU20,2,17,18,15:COLOU

R1:CLS:PRINT" ":PRINT"
NRONG":SOUND1, son %, 65, 30:F
ORloop%=0T04000:NEXT1oop%
1060CLS:PRINT"Your score i

S:"|UZ 1878PRINT"

1888PRINT*Now it's my turn

1898FOR1copX=0T03880; NEXTI

1100ENDPROC

1118FGRyX=824T06885TEP-224 1128FGRxX=64T01152STEP192 1138V0U29,xX;yX;xV0U24,0;8 ;168;192;:6COL8,131:CL6:VDU 24,28;28;148;172;:6COL8,129

1148NEXTXX 1158NEXTXX

1160x X=64: yX=824: nsX=1: PRO

117060T0850 1180ENDPROC

1198DEFPROCCOmputer

1200nsZ=0:xZ=64:yZ=224:PRO Coard

1218v%=r%:C%=C%+|:|FC%=1||T HENGOTO|428 1228v%||78.28.17.34.15.00.0

1220VDUZB,20,17,36,15:COLO UR2:CLS:IFchcX=0THENSOTO126 0

12381Fr1>8 OR r1(5 THENGOT 01268

1240PRINT" ":PRINT"I'M CHA NGIMB CARD";:FORloop%=8T015 80:NEXTloop%

1250chc2=8:x1=64:y1=224:PR 0Ccard:v1=r1

1249chc%=0:CLS:PRINT" HIGH ER or LOWER"

1278PRINT"

12881Fv1>6THENans*="L" ELS Eans*="H"

12901Fans\$="L"THENPRINT" LOWER"; ELSEPRINT" HIGHER";

1308FORLoop1=0T02000:NEXTL

1310x1=x1+192:IFx1>)160 TH ENy1=0 1320!Fx1>!160 THENx1=64

1330PROCcard

1340fFyX(rZ ANDans#="H"THE NGUT01350 ELSEIFyX)rX ANDan s#="L"THEN1350 ELSEGUT01380 1350V0120,20,17,36,15:COLO UR2:CLS:PRINT" ":PRINT"

CORRECT* 1380SOUND1,so%,97,10:SOUND

1,50%,185,18150UND1,50%,89, 18150UND1,50%,41,18150UND1, 50%,69,28

1370F0R1copX=0T04308:NEXT1 copX:60T01218 1380VDU28,20,17,36,15:CDL0

URZ:CLS:PRINT" ":PRINT" WRONG":SOUND1,son1,65,38; FORL cop 1=0T04080: NEXTI cop 1:

1390PRINT" My score ist "; CX 1400FDRIogoX=0T04300;NEXTI

OOP Z 1418ENDPROC

1428FORyX=224T08STEP-224 1438FORxX=64T01152STEP192 1448V0U29,xX;yX;;VDU24,8;8

1168;192;:6C0L0,131:CL6:VDU 24,28;28;148;172;:6C0L0,138 :CL6

1450NEXTXX 1460NEXTXX

1470x1=64: y1=224:ns1=1:PRO Ccard

148860T01218 1498ENDPROC

1588DEFPROCone 1518MOVE64,112:VBUqZ 1528FNDPROC

1520ENDPROC 15300EFPROCtwo

15380EFPROCTWO 1548MOVE64,64:VDU(q1-27):X OVE64.168:VDUo1

1550ENDPROC 1560DEFPROCthree

1578MOVE64,64:VDU(q2-27):M OVE64,112:VDU(q2-27):MOVE64 ,168:VDUq2

1588ENDPROC 1598DEFPROCFour

1600MOVE40,00:VDU(q2-27);M OVE40,144:VDUq2:MOVE00,80:V DU(q2-27):MOVE00,144:VDUq2

1618ENDPROC 1628DEFPROCfive 1638MOVE3Z,88:VDU(6%-27):M

OVE32,144; VDUqX: MOVE96,80; V OU(qX-27) 1648MOVE96,144; VDUqX: MOVE6

1648MDVE96,144:VDUq1:MOVE6 4,112:VDUq1

1650ENDPROC 1660DEFPROCEIX

1678MOVE48,72: VDU (q2-27):M 0VE48,112: VDUq2: MOVE48,152: VDUq2: MOVE68,72: VDU (q2-27): NAUF88 112: VDU(q2-27):

VDUqX: MOVE88, 72: VDU(qX-27): MOVE88, 112: VDUqX: MOVE88, 152 : VDUqX 1688ENDPROC

1698DEFPROCseven

1789MOVE32,72:VDU(qX-27):M 0VE32,112:VDUqX:MOVE32,152: VDUqX:MOVE96,72:VDU(qX-27): MOVE96,112:VDUqX

1710MOVE96,152; VDUq1: MOVE6 4,136: VDUq2

1720ENDPROC 1730DEFPROCeight

1748MOVE32.72: VDU (a7-27): M OVE32.112: VDU (pX-271: MOVE32 ,152: VDUQZ: MOVE64, 96: VDU (01

1758HOVE64.136: VDUgZ: HOVE9 6.72: VDU (0%-27): MOVE96.112: VDU (a1-27): MOVE 96.152: VDU a1 17ARENDERDE

1778DEFPROChine

1789MOVE64.112: VDU (nX-27): MDVE32.64: VDU (a%-27): MDVE32 .96: VDU (a1-27): MOVE32, 128: V DUGT: MOVE32. 168: VDUGT

1798HOVE96.64: VDU (ax-27): H OVE96.96: VDU (01-27): NOVE96. 128: VDUgl: MOVE96, 160: VDUgl 1800ENDPROC

181@DEFPROCT en

1820MOVE64.80: VDU (p2-27): H BVE64.144: VDUoX: NOVE32.64: V DU (0%-27): MOVE32, 96: VDU (0%-271

1838MDVE32, 128: VDUoX: MOVE3 2,168; VDUqX: MOVE96,64; VDU(q X-27) : MDVE96, 96: VDU (qX-27) 1848MOVE96,128: VDUgX: NOVE9 6.169: VOUnt

1850ENDPROC 1860DEFPROCING

1979015

1880VDU19,1,8:8:19,2,8:8:1 9.3.8:8:

1890COLOURI

1908PRINT"::PRINTTAB(12); "HIGHER OF LONER"

1918001.0082

1928 PRINTTAB(12): "====== agaggage*

1938COLOUR1

1948PRINT':: PRINTTAB(12): (by Ian Cooper)* 1950COLOURS

1968PRINT';:PRINTTAB(7);" You compete against the '; T AB(7); "computer to get as

many " 1978PRINTTAB(7): "right que sees as possible, ": PRINT':: PRINTTAB(7); If you thin

k the next 1980PRINTTAB(7): "card is o oing to be higher"; TAB(7); then press 'H' , If you"

1990PRINTTAB(7): "think it will be lower": TAB(7): "then press 'L'. When you'

2000PRINTTAB(7); "get one w rong the computer": TAB(7);" will have its oo."

2010PRINT': PRINTIAB(9):" The winner is the one": TAB(9): "with the highest score.

2020COLOUR2: PRINTTAB(12.22): "ACE COUNTS LON. "

2030COLOUR3:PRINTTAB(17.24): "SOUND": COLOURL: PRINTTAB(17.25): "====="

2849COLDURS: PRINTTAR((A): (Y) = ON": TAB(16): "(N) = DFF" 2050PRINTTAB(13,29); *Press

Y or Nam 2868VDU19.1.1:8:19.2.3:8:1

9.3.7:8: 2878+FX15.1

2888A\$=GET\$: IFA\$()"Y" ANDA \$C>"N" THENGOTO2888

2090IFA\$="Y"THENSOX=3 ELSE col-0

2188[FAS="Y"THENGONZ=4 ELS EsonZ=#

2110015

212BENDPROC 2138DEFPROCeard

214040023,224,207,73,73,73 ,73,73,239,0

2158VDU29,x%;yX;:VDU5,24,8 : 0:160:192::6COL0.131:CL8 21681FnsT=LTHENGOTD2188 2178r 1=RND (13): suit1=RND (4

2180ns1=0

2190(FsuitZ=1THENgY=252 EL SEIFsuit%=2THENg%=254 ELSEI Fsuit%=3 THENg%=253 ELSEg%= 255

2288no7=r1+48: [Fr7=1THENno T=65 FLSEIFr X=18THENnoX=224 ELSEIFrX=11THENnoX=74 ELSE IFr%=12THENno%=81 ELSEIFr%= 13THENnoX=75

2210RESTORE ((r %+10)+2460) 222@READIY, JY, KY, LY, MY, NY,

2238VDU23,229, IX, JX, KX, LI, MY. NY. GY. PY

2248RESTORE ((suit % 18) + 259

2258F0R1 ppg X=258T0251: READ IZ.JZ.KZ.LZ.MZ.NZ.OZ.PZ 2260VDU23,1pop%,1%,J%,K%,L Z. MZ. NZ. GZ. PZ: NEXTLOODZ 2278IFsuitX<3THENSCOLE.8 E

LSEGCOLE.1 2280MOVER, 188: PRINTCHR\$ (no X);; VOUB, 18, 258; MOVE132, 28;

PRINTCHR\$ (229): VDUB. 11.251 2298 IFr %=1 THEMPROCORE ELSE



IFr%=2THENPROCEMO ELSEIFr%= 3THENPROCEHTER ELSEIFT = 4TH ENPROCEOUR ELSEIFFZ=5THENPR active

23881Fr1=6THENPROCEIK ELSE IFr 1=7THENPROCseven ELSEIFr Z=8THENPROCEIGHT ELSEIFrZ=9 THENPROCRING ELSEIFT = 18THE NPROCT en

2310 Fert) 19THENPROCEOURT 2329Ublis

233BENDPROC

2348DATA(99,232,82,74,288, 208.72.72.32.16.13.18.4.4.4 ,4,203,200,72,75,202,210

2350DATA111,65,4,7,7,4,5,1 3,16,32,132,59,129,133,7,2, 9,28,67,68,70,74,72,81,112,

236@DATA28,208,32,248,161, 129, 228, 33, 42, 4, 196, 10, 82, 9 8,34,194,138,246,75,83,218, 18.19

2378DATA211,4,8,176,168,32 ,224,224,32,18,18,19,19,82, 74.23.227.32.32.32.32.168.1 76,8,4

2388DATA181,255,8.8.8.8.8.56 .0.0.0.254,0.40,0.0.0.0.0.0.0 ,138,131,131,195,8,28,8,8,8

2398DATA255,173,195,193,19 3,193,66,8,8,8,8,8,8,28,8,1 27,8,8,1,3,3,3,8,8,3,128,

2400DATA48,60,15,3,8,192,8 .0,192,192,192,192,192,0,19 2,248,68,12,7,8,1

2418DATA8, 124, 4, 6, 2, 2, 115, 1,62,2,3,1,81,1,8,8,8,8,8,128 ,136,4,4,4,6,128,286,64,64,

2428DATA62,8,96,32,32,32,1 7,30,0,0,0,0,128,138,128,19 2,64,124,8,8,8,128,192,224,

24380ATA48, 3, 7, 15, 15, 7, 3, 1 93,193,12,12,7,3,1,8,8,8,8,13 1,131,192,224,248,248,224,1

2448DATA8,8,127,8,8,8,28,8

.85.85.8.65.213.193.193.195 .42,42,8,8,8,8,8,8,8,56,8,8 .8.254

2459DATAB. 8.8.8.8.8.8.8.8.8.84 .84,195,131,131,171,130,0,1 78,178,8,1,1,1,1,1,129,129 246@DATA2,6,6,6,6,6,6,6,12 9,129,128,128,128,128,128,128,8 ,96,96,96,96,96,96,96,64 24780ATA182,182,182,126,18 2.192.68.9

2480DATA126,12,24,48,96,18 2.68.8 2498DATA68, 182, 96, 56, 96, 18

2,68,8 2580DATA48,48,126,54,68,56 .48.8

2518DATA68,182,96,96,62,6, 126.€

2520DATA60, 182, 182, 62, 6, 12 2530DATA12,12,12,24,48,96.

2548DATA68,182,182,68,182, 102.60.9

25580ATA28,48,96,124,182,1 82. AB. B

2560DATA247, 146, 146, 146, 14 6.146.243.# 2570DATA28,54,48,48,48,48,

2580DATA108,54,86,102,102. 182.68.8

2590DATA102,54,38,14,38,54 ,182,8 2600DATA56.84.124.84.16.0.

8,8,8,8,8,42,62,42,28,8 2610DATA16,56,124,16,56,0, 8.8.8.8.28.8.62.28.8.8 2628DATA16.56.124.56.16.8. 8.8.8.8.8.28.62.29.8.8 26380ATA188,124,124,56,16,

0.8.6.8.0.8.28.62.62.54.0 2648IF ERR=17 THENRUN ELSE MODE6: PRINT ' :: REPORT: PRINT " at line "ERL

This listing is included in this month's cassette tape offer. See order form on Page 61.

I'VE had literally dozens of letters asking for help with Twin Kingdom Valley, so this month I am going to explain the uses of most of the objects you come across and some of the problems you will therefore face in the adventure.

Firstly, though, I have a copy of Peter Gerrard's book Exploring Adventures on the Electron to give away.

There are three problems I can't solve (well, three particular problems) and the first person to write in with all the solutions or the best combination of them will get the book.

So get writing in - the closing date is one month from publication of this issue.

The problems are:

- How do you get past the rat in Program Power's Adventure?
- In Classic Adventure how do you get into the repository and what do you do when you get there?
- Are there any secret entrances in the inner sanctum and how do you get to them in Sphinx Adventure?

While I'm flaunting my fallibility, I've had quito a lew letters from people stuck in adventures that I haven't seen.

So, can anyone help with the following:

In Strange Odessey how do you get the plastic out of the hexagonal room and how do you read the alien script on the boulder in the cave?

In Mystery Fun House how do you get out of the pit?

In Countdown to Doom how do you stop the computer spitting out the discs?

Finally, in Five Stones of Anadon (yes, I got stuck here) how do you get past the ghost in the cellar?

Now back to the Twin Kingdom Valley, and many thanks to Michael Dunlop and Mike Farmer, who both provided solutions I desperately needed.

Now be warned! Read no further unless you are well and truly stuck!

The Treasures:

Three bags of gold: Give one to the guard when put in prison. Three bags of silver. The castle guards have two and the



Route through Twin Kingdom Valley...

sandlurker one.

The crown: This is worn by the desert king.

Ball of gold: You will find this in the upper levels of the castle.

Treasure chest: This is very heavy and you cannot carry anything else. A Iriend can help here.

Stall of gold: The witch in the east turret has this

Diamond: This is in the cave hear Watersmeet.

Diamond ring: The dwarf has this. To get it from him you'll



need to ensure that he can't

The secret of lite: This is at the river of gold, behind the

Jug of gold: Try filling the jug-Silver key: This will be given to you in exchange for rescuing the princess.

Gold key: This is in the kitchen behind a secret door

Other objects:

Jug: Handy for carrying water and gold!

Flint; You have to have this to light the lamp.

Beer (available from the inn): Very refreshing? Watch what it does to your health, though. Crystal ball: If you give this to the witch with the bronze key, she will reward you.

Amulet: The princess will recognise you with this on. Short rod: You can wave it to get a short cut to the desert king's castle.

Master key: Very handy. Opens any door.

The wooden staff. The ultimate weapon.

The treasure chest: Needed to get to the tiver of gold. Look in the castle

The ill giant: Free him and go to Watersmeet. Try to make him leef better.

Holdall: Very handy for carrying-things!

Uniform: This makes you look like a guard from a distance, though not close up

Watersmeet: Swim here to regain strength. If you drink you will get the secret of closed doors.

And finally, 1:024 points? Really want to know? Well, look at the following code:

MVEIRELWISNEWCARSEETRIE

If you take every other letter starting with the second one, you'll find the answer.

You should now be able to solve TKV. Admittedly, you



still have a lot of work to do; but you should find that you now have enough information to solve it.

This month we have received a plea for help from a BBC adventurer stuck in the jungle in Countdown to Doom. This is a maze of looks-all-the-same locations

Anything DROPped "dis appears into the under growth".

This maze is NOT all the same. The descriptions differ slightly.

Make a map based on whether the descriptions change or not.

The save game facility is a big help here. When you find a location whose description



differs radically from the others, you'll be close to the

A. Marsh says he has mapped all of Adventureland but cannot find the last treasure. How many times have you rubbed the lange?

J. Lutley says she can't get the anchor in Pirate Adventure. Dig it out!

M. Burns and Barbara Witkinson are having problems with Castle Frankenstein. To get up the slope, use your head. To get rid of the monster, cut the bridge white he's standing on it. The violin isn't used, but it does count towards your score.

Stephen Buxton is having trouble with the knights in Quest for the Holy Grail, Use a matching sword.

Scott Bowie also has problems. If you want to get the axe, hide it first. Carry the plank up the tree, you'll find the swamp when you come

back down again.

Beryl Webber, Phillip Mac donald and Julie Powell all want help with Sphinx Adventure. The mithril ring is in the grotto across the swamp. Use the sword on the ogre. Yes, there are things worth having in the mazes and the catacombs. The sphinx is in the desert. Man it. Use the dragon's teeth to get past the gobfins

Neil Costigan-can't get across the lake in Kingdom of Klein. Go to the chanel, Push the portrait and unlock the sale

Sally Barber, Deryck Will loughby, Andrew Teece and Scott Bowie need some



answers for Classic Adventura

Get the pirate's treasure chest from the maze with the

Say "PLOVER" at Y2 to get the platinum ovramid

Free the bear to scare the troll and you can get across the bridge. Where you see the green light you can drop the lamp to enter the cave.

From Witt's End keep going

You don't get any batteries at the machine as far as I can

To get the nugget out, say "PLUGH" at Y2 The person waving at you is

you. You are seeing your own reflection in a mirror

To get past the bear, FEED HIM. UNLOCK CHAIN GET CHAIN, GET BEAR, then see above

What are the mirrors used for? Nothing.

is there any way to get



through the waterfall? No

Is there any way to get past the fissure with the molten lava? No.

As you can see from the competition, I've not finished Classic Adventure. So H's possible that I've missed something in the answers I have given. If I have I hope you'll let me know.

 If you want Merlin's help write to:

Merlin, Electron User, Europa House, 68 Chester Road, Hazel Grove. Stockport SK7 5NY

- and enclose an SAE if you would like a reply.

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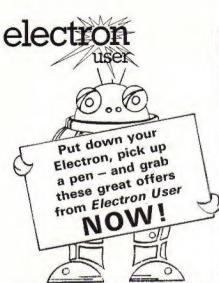
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2 1st Software Bit Twiddlers	53 62
Brain Train Club	62
Cumana	45
D.A.C.C	22
Epic Software	59
First Byte Computers	29
Golem Ltd	62
Incentive .	2
Kansas City	22
Kosmos	12
Qualsoft	12
Slogger Software	8
Software Classics	29
Superior Software	64
Vine Micros	29

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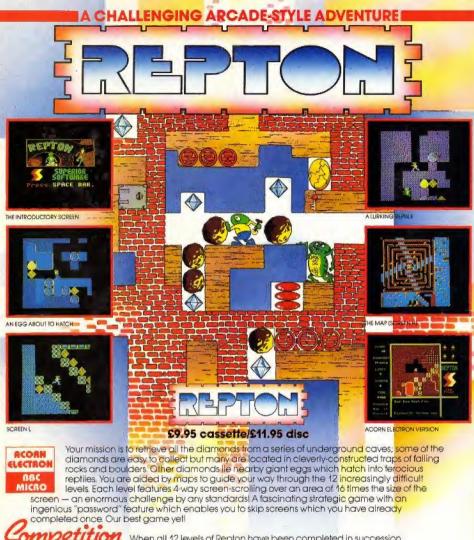
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